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THE WILSON ORNITHOLOGICAL CLUB

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GAMBEL SPARROW

Adult
Immature

WHITE-THROATED SPARROW

Adult
Immature

UNIV. DE MONT.

THE WILSON BULLETIN

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THE CROWN SPARROWS (ZONOTRICHIA) OF THE MIDDLE WEST

BY MYRON H. SWENK

With Colored Frontispiece by Iva B. Swenk

The genus *Zonotrichia* is a purely North and Middle American genus of sparrows. According to the third edition of the A. O. U. Check-List (1910) it includes four species; viz., the Harris's Sparrow (*Z. querula*), the White-crowned Sparrow (*Z. leucophrys*), the Golden-crowned Sparrow (*Z. coronata*), and the White-throated Sparrow (*Z. albicollis*). The Harris's, Golden-crowned, and White-throated Sparrows are all very well-marked species, presenting so little geographic variation that no ornithologist has ever proposed any subspecific division of them. Their breeding ranges are distinct and solid, that of the Harris's Sparrow (Hudsonian Zone) apparently lying entirely north of the breeding range of the White-throated Sparrow (lower Hudsonian and Canadian Zones) and that of the Golden-crowned Sparrow (Hudsonian and Upper Canadian Zones) entirely west of it. The Golden-crowned Sparrow is a purely accidental straggler to the Middle West, so this paper does not concern itself with that species. The breeding range of the White-throated Sparrow extends south to northern Michigan, Wisconsin, Minnesota, and North Dakota, and it migrates commonly through the Middle West, wintering from the Ohio River Valley, northern Missouri, and eastern Kansas southward.

In marked contrast to the three species just mentioned, the White-crowned Sparrow of the last (1910) A. O. U. Check-List would seem to present considerable geographic variation. That authority recognizes a typical subspecies, the White-crowned Sparrow (*Z. l. leucophrys*), as occupying during the breeding season not only a large area in northeastern North America (Hudsonian and extreme Upper Canadian Zones) but several apparently isolated areas in the high mountains of the western United States, extending north in the Rocky Mountains to southwestern Alberta and southeastern British Columbia; a northwestern subspecies, the Gambel's Sparrow (*Z. l. gambeli*), as

occupying a large area (in the same zones) covering most of Alaska and western Canada, extending south in the Rocky Mountains to western Montana; and a Pacific coast subspecies, the Nuttall's Sparrow (*Z. l. nuttalli*), as occupying a narrow area along the coast (Humid Transition Zone) from southern British Columbia to central California.

Recently, Dr. Joseph Grinnell (1928) has proposed to separate the somewhat paler colored, more northern examples of *Z. l. nuttalli* occupying the coast region from southern British Columbia to extreme northwestern California as a distinct subspecies, *Z. l. pugetensis*, restricting typical *nuttalli* to the coast area of California. Since neither *nuttalli* nor *pugetensis* extends to the Middle West, they and the problems they present are not importantly involved in the present paper, but the White-crowned Sparrow and the Gambel's Sparrow, both of which are common migrants through this region, do present a problem of considerable interest to the ornithologists of the interior. A leading question in the mind of the writer at this moment is, does the treatment accorded these birds in the last (third) edition of the A. O. U. Check-List, which has been very recently endorsed by Dr. Grinnell (1928), and which the writer understands is likely to be continued in the forthcoming fourth edition of the Check-List, accord best with the known facts concerning them?

The diverse and varying opinions of our leading systematic ornithologists as to the correct relationship of the Gambel's Sparrow to the White-crowned Sparrow have caused the taxonomic placement of the former to be shifted several times since it was first described—as a distinct species—by Thomas Nuttall in 1840, from specimens taken the last of August at Fort Walla Walla, Washington. Authors subsequent to Nuttall, between 1840 and 1872, including Gambel (1843), Baird (1858), Coues (1866), and others, continued to regard the pale-lored birds of the West as constituting a distinct species from the black-lored *Z. leucophrys*. In 1872 both Allen and Coues for the first time formally questioned the specific distinctness of *gambeli* from *leucophrys*, and wrote the former as a variety of the latter, Coues including also the Nuttall's Sparrow under the name "*var. gambelii*".

Then in 1873 Ridgway, recognizing the difference between the larger and paler white-lored bird now known as the Gambel's Sparrow and the smaller and darker white-lored bird of the Pacific Coast now known as the Nuttall's Sparrow, but erroneously thinking that the name "*gambelii*" of Nuttall applied to the latter form, proposed the name *intermedia* (=Intermediate Sparrow) for the former bird, and at the same time continued to give both birds the status of varieties of

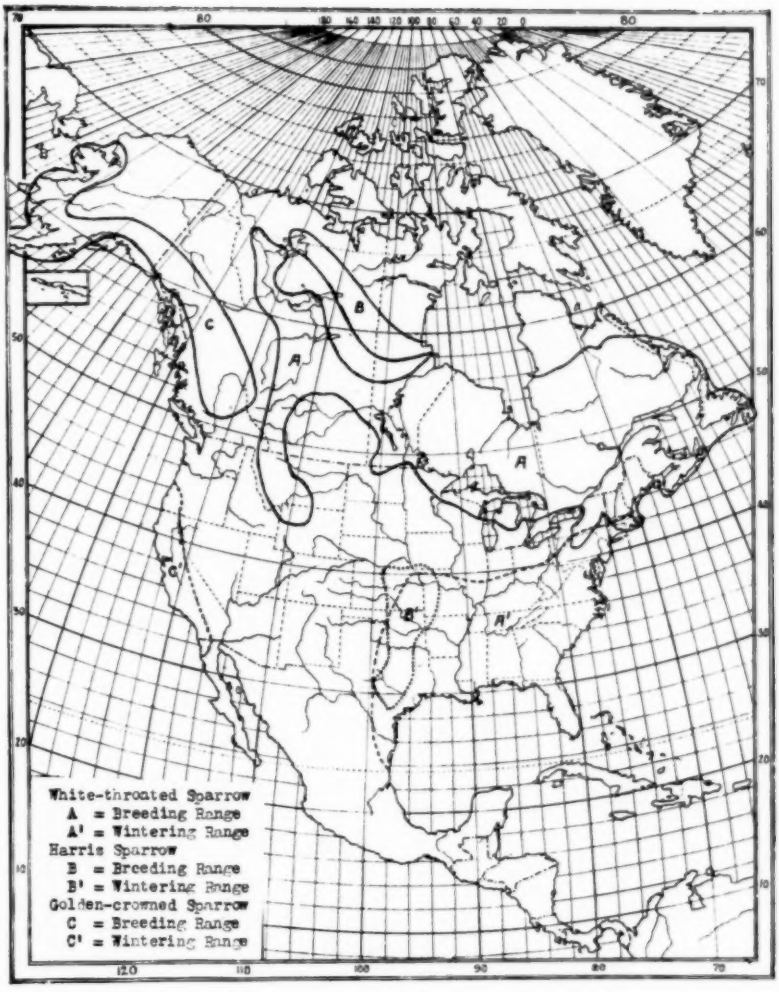

FIG. 1. Map showing approximate breeding and wintering ranges of the White-throated, Harris's, and Golden-crowned Sparrows.

the White-crowned Sparrow. In this disposal of them he was followed by Baird, Brewer, and Ridgway (1874), Coues (1874), and others. But some authors continued to regard both *intermedia* and the Pacific Coast form wrongly called "*gambelii*" as full species, and that was the disposal made of them in the first A. O. U. Check-List when it appeared in 1886 (Nos. 555 and 556).

However, a number of writers failed to follow the A. O. U. Check-List in this matter, but wrote both *intermedia* and "*gambelii*" as subspecies of *leucophrys*. Still others, again following the lead of Ridgway (1880), wrote *intermedia* as a subspecies of the Nuttall's Sparrow, which was still regarded as the true *gambeli*. In 1890, in the second supplement to the Check-List, the A. O. U. Committee made "*gambelii*" a subspecies of *leucophrys*, and similar action was taken with both *intermedia* (554a) and "*gambelii*" (554b) in the second edition of the A. O. U. Check-List, which appeared in 1895. Somewhat later Ridgway (1899), having examined specimens from the type locality of "*gambelii*", reported that he found them to represent the form that he had previously named *intermedia*, which name therefore became a synonym of *gambeli*, while the new name *nuttalli* (=Nuttall's Sparrow) was proposed for the Pacific Coast bird that had so long been miscalled "*gambelii*". This is the present status of these birds, as recognized by the A. O. U. Committee.

The commonly accepted criteria of subspecies, as the writer understands them, are that during the breeding season they shall occupy geographically separated areas within the range of the species as a whole, and that their differentiating characters shall intergrade with each other, either by so gradual a transition, or by so much overlapping of characters, that no point of trenchant separation of the two forms can be found. The question arises, how do the White-crowned and the Gambel's Sparrows align with regard to these criteria?

Regarding the occupancy of geographically separated breeding areas, we have the evidence presented by J. H. Riley, who in 1913 pointed out that in the Mount Robson, British Columbia, region of the Canadian Rockies both *leucophrys* and *gambeli* were apparently nesting at the same places and without intergradation. In 1914, Saunders reported that apparently both *leucophrys* and *gambeli* were summer residents in the mountains of Teton and northern Lewis and Clarke Counties in northwestern Montana, and that there was evidently a distinct difference in their songs. In 1926 Swarth clearly showed the overlapping of the breeding ranges of *leucophrys* and *gambeli* in southeastern British Columbia, southwestern Alberta and

northwestern Montana, and again pointed out the lack of intergradation between the two forms, which he wrote as distinct species. Quite evidently, then, while the breeding range of *leucophrys* extends northward in the Rocky Mountains through western Montana and on north along the Alberta-British Columbia boundary, that of *gambeli* extends southward over the same area. We have, therefore, these two forms occupying the same territory over a large area within their respective breeding ranges, a condition that is incompatible with the conception of their status as subspecies.

Now regarding the matter of intergradation between *leucophrys* and *gambeli*. Do they gradually merge into each other, or do birds occur that are intermediate in characters between the two? Admittedly they are very close—about the only important difference being that in the White-crowned Sparrow the upper lores are black and cut the white superciliary stripe from the bill, while in the Gambel's Sparrow the upper lores are whitish, thus making the white superciliary stripe continuous to the bill. But this difference, though slight, is definite and trenchant. In fact, partly because of their unsuspicious nature, these sparrows can usually be approached quite closely in the field, and with the help of a good field glass the ornithologist can quickly and definitely identify the Gambel's Sparrow from the White-crowned Sparrow in the great majority of cases. The writer has not examined a great number of skins of these two sparrows—probably less than fifty of them altogether—but he has never seen one that could not very definitely be placed as either *leucophrys* or *gambeli*, while the large number of birds that he has clearly seen in the field were placed quite as definitely. On this point Swarth (1926) has written:

"I am using the binomial name for this bird in the conviction that the three white-crowned sparrows, *leucophrys*, *gambelii*, and *nuttalli* are three distinct species. There are various trenchant external characters of plumage and other parts distinguishing them, there are just as notable differences of song, and the breeding ranges and migration routes also are indicative of specific differences. As regards external characters, while I am aware that there are various published statements of the existence of intergradation between these forms, these assertions are all rather vague. In this museum [of Vertebrate Zoology] there are approximately 200 specimens of *leucophrys*, 270 of *gambelii*, and 200 of *nutalli*. There is not one equivocal specimen in this series, not one that can be said to illustrate in even the slightest degree intergradation between any of the forms. Nor have I seen

intermediates in other collections. If any such do sporadically occur it seems to me that they should be regarded as hybrids rather than geographic intergrades."

Dr. Grinnell (1928) subsequently took issue with Swarth on his statement that the three forms *leucophrys*, *gambeli*, and *nuttalli* were trenchantly separated, and that in a series of about 670 specimens representing these forms "not one can be said to illustrate in even the slightest degree intergradation between any of the forms", stating that he was able to find specimens from among the birds inhabiting the northern part of the range of *nuttalli*—to which he applied the new subspecific name *pugetensis*—that were intermediate in characters between *gambeli* and typical *nuttalli* from west-central California. But although he regarded *gambeli*, *pugetensis*, and *nuttalli* all as subspecies of *leucophrys*, Grinnell made no claim of finding intermediate characters or intergradation between *leucophrys* and *gambeli*, and his arguments would not seem to invalidate the findings of Riley and Swarth on that point. Possibly *gambeli*, *pugetensis*, and *nuttalli* may be conspecific, but it seems to the writer that the best evidence points to their collective specific distinctness from the White-crowned Sparrow (*leucophrys*), and in view of this evidence he sees no logical alternative to so regarding them.

A search through the literature for citations of evidences of actual subspecific intergradation between *leucophrys* and *gambeli* has been rather barren of results. As Swarth (1926) has said, assertions of this sort are "all rather vague", and one is rather drawn to the conclusion that such intergradation has been assumed because of the great similarity of the two birds, rather than actually demonstrated. Baird, Brewer, and Ridgway (1874) do refer to intergrades from the Humboldt Mountains, Nevada, but they do not make very clear the nature of the intergradation. Coues (1905) says "some specimens resemble *leucophrys* on one side of the head, and *intermedia* (=*gambelii*) on the other." That is at least a definite statement; but, as Swarth has suggested, if such birds occur they are far better accounted for on the basis of hybridity than on the basis of gradual subspecific intergradation. It seems probable to the writer that it is the great general similarity between *leucophrys* and *gambeli* that has mainly argued for their specific merging. As Grinnell (1928) puts it "there is that approximate degree of uniformity of characters in the three major forms (*leucophrys*, *gambelii*, and *nuttali*) as to make of them excellent *subspecies*; but the likenesses between them are so outstanding, as compared with other *species* of *Zonotrichia* (*albicollis*, *coronata*, *querula*),

that an indication of the really close mutual inter-relations among them would be lost by according the forms of *leucophrys* full specific rank." With this conclusion, however, the writer does not concur. On the same basis we would have to merge the Meadowlark and the Western Meadowlark, the Clay-colored and the Brewer's Sparrow, and others. As well write the Least Flycatcher (*Empidonax minimus*) as a subspecies of the Traill's Flycatcher (*E. trailli*), in spite of their differences in song, eggs, etc., because the two have a marked uniformity of characters and outstanding likenesses. They are in fact much more difficult to separate than are the White-crowned and Gambel's Sparrows.

The difference in song between the White-crowned and Gambel's Sparrows has been noted by Saunders (1914 and 1929), Swarth (1926), and others, but it is not a point upon which the writer would lay a great deal of emphasis as indicating the specific distinctness of the birds. This is because their songs, especially those of the White-crowned, seem to be subject to considerable geographic variation. The song of the white-crowns of the Northeast consists typically of a soft, plaintive, clearly whistled introductory note, followed by a couplet of louder but shorter clearly whistled notes, which in turn are followed by a second couplet or triplet of rapidly diminishing, burred-toned notes and a final still more diminished, usually burred note, and may be given as "*oh-che-che, che-che, che*" or _ _ — ‾ _ _. In northern Montana, from Mrs. Bailey's (1918) description, this song is apparently lengthened to an eight-toned song, that might be given as "*oh, che-che-che, che-che-che, che*", or _ _ — – ‾ ‾ — —_, and in the Sierra Nevada, according to the same writer (1902), is shortened to a five-toned song which might be given as "*oh, oh, che-che-che*", or _ – ‾ _ _. The typical full song of the Gambel's Sparrow consists of a clearly whistled introductory note, followed by from three to five usually shorter, plaintive, clearly whistled notes and a final burred note, that may be given as "*oh, che-che-che-che-e*", *or* _ — – – – —_ . Saunders (1914) says of the songs of both in their common breeding ground in northwestern Montana that "the song which evidently belongs to *gambelii* is like that of *leucophrys* but shorter, with three or four of the terminal notes omitted. I have never heard any but the longer song in southern Montana, where I believe only *leucophrys* breeds." But it is doubtful if the northern Montana song of *gambeli* is appreciably shorter than the Sierra song of *leucophrys*, or even that of the Northeastern song of that bird. However, the songs of the two differ, as judged from migrating birds of both species heard in

Nebraska, and from the songs of *gambeli* heard during the spring in southern Arizona, in the clearer, less husky quality of all of the notes beyond the introductory one in *gambeli*, which also has a less sharply marked crescendo and diminuendo in its song.

Not only are the breeding ranges of the White-crowned and Gambel's Sparrows well defined, though in part overlapping, but the same is true of the wintering ranges of the two birds. The White-crowned Sparrows of northeastern North America move southwest across the New England, North Atlantic, and North Central States to their wintering range, which extends from the valleys of the Potomac and Ohio Rivers and southern Missouri, Kansas, and Colorado south to southeastern Kentucky, eastern Tennessee, southern Mississippi, Louisiana, and Texas, and central Mexico (about lat. 19°). The white-crowns of the higher mountains of the West move more directly south. The Gambel's Sparrows move south, along the valleys of the West and across the Great Plains, to a wintering range lying in general somewhat north and west of that of the White-crowned Sparrows, from southern Washington, western Oregon, western and southeastern California, central Arizona, western New Mexico, central Colorado, central Kansas, and west-central Missouri south to south-central Texas, north-central Mexico (about lat. 24°), and southern Lower California. The two species winter, then, in the same localities, over a large area covering southern Colorado, southern Kansas, west-central Missouri, Oklahoma, central and western Texas, New Mexico, and northern Mexico. These birds apparently largely pass over the northern plains —eastern Colorado, Wyoming and Montana, the Dakotas, Nebraska, Iowa, and Minnesota—each spring and fall, the White-crowned in the spring from southwest to northeast and the Gambel's from southeast to northwest, and the reverse in the fall. Nebraska is in the direct path of the migration of both.

In Nebraska the White-crowned Sparrow is a common migrant, especially in the spring, west to about the 98th meridian, but west of that line it rapidly becomes increasingly less common across the state, though it is hardly a rare bird even in extreme western Nebraska. The Gambel's Sparrow is a very common migrant over the western two-thirds of Nebraska and even in the eastern one-third is distinctly more common than the White-crowned Sparrow. Westwardly in Nebraska the Gambel's Sparrow greatly predominates over the White-crowned. In 1920 Dawson found Gambel's Sparrows migrating commonly through Sioux County, extreme northwestern Nebraska, from September 26 to October 9, but noted only one White-crowned Spar-

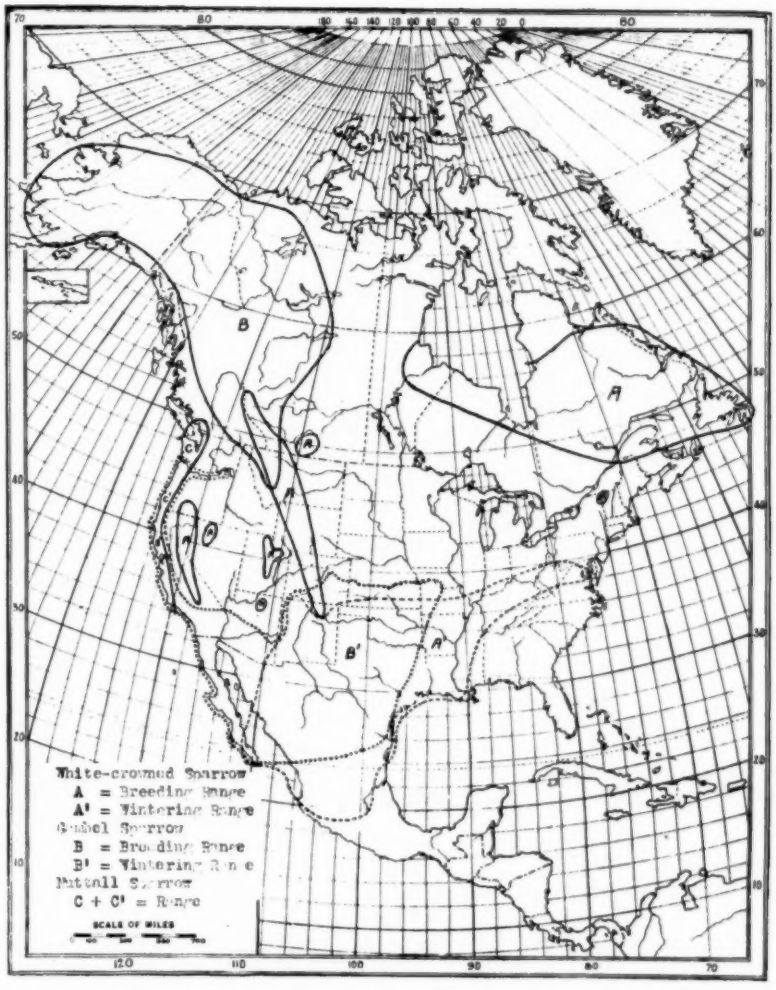

FIG. 2. Map showing approximate breeding and wintering ranges of the White-crowned, Gambel's, and Nuttall's Sparrows. Breeding ranges taken from H. S. Swarth, Univ. Calif. Publ. Zool., 30, fig. J (1926).

row during this period (on September 30). At Kearney, Buffalo County, in central Nebraska, the Gambel's Sparrow is distinctly the more common of the two. Four out of five crown sparrows taken there in the spring of 1914 (April 23 to May 20) were Gambel's Sparrows. Similarly, the Gambel's outnumbers the White-crowned at Hastings, Adams County; Red Cloud, Webster County, and Superior, Nuckolls County. Of thirty-three crown sparrows trapped at Fairbury, Jefferson County, in the years 1924 to 1928, inclusive, by the Misses Callaway, twenty-one were Gambel's Sparrows (April 29 to May 16) and twelve were White-crowned Sparrows (April 27 to May 21). At Lincoln, Lancaster County, taking 104 carefully made field observations, covering a period of years and including both spring and fall dates, the Gambel's Sparrow constitutes 59 per cent and the White-crowned Sparrow 41 per cent of the birds observed. In the spring the ratio of the two species at Lincoln is about as 5 to 3, while in the fall it is about as 2 to 1, the Gambel's Sparrow thus predominating at both seasons. The Gambel's Sparrow is about twenty-eight per cent as common in the fall as it is in the spring at Lincoln; the White-crowned Sparrow about twenty-one per cent.

The writer cannot help but believe that the paucity of records of the Gambel's Sparrow for at least the tier of states east of Nebraska is more due to a lack of careful discrimination of the birds seen in the field than an actual great rarity of that species, a suspicion strengthened by the very recent records of Zimmer and Gregory (1929) of specimens of this bird from Huron Mountain, Marquette County, Michigan, October 12, 1924; Beach, Lake County, Illinois, October 6, 1906; and Waukegan, Lake County, Illinois, May 14, 1922, found confused with the White-crowned Sparrow in Chicago collections. Other published records are from Minneapolis, Minnesota, October 5, 1873; May 17, 1878; May 6, 1879 (Roberts, 1879); Decatur County, Iowa, spring (Trippe, 1872); Forest City, Iowa, October 5, 1894; October 3, 1896 (Anderson, 1907); Racine, Wisconsin, April 20, 1871, by P. R. Hoy, and Madison, Wisconsin, May 17, 1919 (Taylor, 1920); and Jackson County, Missouri, February 25, 1917 (Harris, 1919). It is interesting to note that this sparrow has wandered east even to Ithaca, New York, April 30, 1898, by L. A. Fuertes (Eaton, 1914) and to Mount Pleasant, South Carolina, October 23, 1925 (Wayne, 1926).

The published statements regarding the relative migratory movements of the White-crowned and Gambel's Sparrows through the interior country are, at first examination, conflicting and confusing. For example, Cooke (1888) says that in the Mississippi Valley the Gam-

bel's arrives *after* the White-crowned in the fall and *follows* it northward in the spring. At Manhattan, Kansas, he says that in the fall of 1883 the first specimen of the Gambel's Sparrow was taken by Prof. D. E. Lantz on October 9, at least a week after the White-crowned had passed southward, while in the spring of 1884 the Gambel's Sparrow was first seen on May 7, which was eleven days later than the northward migration of the White-crowned. But for New Mexico he states (in Bailey, 1928) "there is no doubt but that *gambeli* moves north in the spring *earlier* than *leucophrys* and birds taken, May 1, 1904, at Rinconada (Surber), and noted, May 15, 1915, at State College (Merrill), probably represent nearly its final departure from the State." The White-crowned, he states "largely concludes its spring migration in May" but mentions several instances of its occurrence in New Mexico well into June (1-11). Again Sclater (1912) says for Colorado that the Gambel's Sparrow arrives "rather *earlier* than the White-crowned, very quickly passing on north to its breeding grounds." He says it arrives as early as September 8 in the fall and as early as March 18 (Pueblo) in the spring, reaching Colorado Springs about the last week in March, while the White-crowned does not reach that place until about the last week in April. In Boulder County, Betts (1913) gives the Gambel's Sparrow as arriving March 20 and the White-crowned as arriving April 24 to 28.

A close analysis of the available migration data for the two species in Nebraska, which state lies directly in the migration path of the birds wintering in eastern New Mexico, Texas, and Oklahoma, partially accounts for these apparently discrepant statements. The earliest fall migrants of both the Gambel's and the White-crowned Sparrows appear in extreme western Nebraska. Quite possibly these first fall arrivals come together from the common breeding area of the two species, only a few hundred miles to the northwest. At Mitchell, Scotts Bluff County, in 1916, C. E. Mickel and R. W. Dawson noted the first Gambel's Sparrow on September 8 and the first White-crowned Sparrow on September 9. But neither of them become common, even in western Nebraska, until after the middle of September (17 to 26), shortly after which they appear in central and eastern Nebraska also. In northeastern Nebraska Cary (1900) gave the fall dates at Neligh, Antelope County, for both as September 22 to November 1. The earliest dates for Lincoln are September 28, 1913, for the Gambel's, and September 28, 1893 for the White-crowned. The average of the first dates for the Gambel's Sparrow in ten falls in southeastern Nebraska is October 13 and for the White-crowned Sparrow in five

falls is October 3. The Gambel's remains until the average date of October 29 at Lincoln, where its latest date is November 6, 1910. The average date for the White-crowned for the same locality is October 23 and its latest date there (and for the state as well, except for one dubious winter record) is November 2, 1907. At Red Cloud, Webster County, C. S. Ludlow noted the Gambel's Sparrow on the late date of November 24, 1921. It is obvious that the Gambel's Sparrow tends to remain north of the 40th parallel later in the fall than does the White-crowned Sparrow, which retires the farther south for the winter period.

From the above it is apparent that during the fall migration of these birds through eastern Nebraska, the White-crowned Sparrow is distinctly the earlier of the two. In the spring migration both species are much more in evidence in Nebraska than in the fall, possibly because in the spring the bulk of them take a more direct route to their breeding grounds. This is especially true of the White-crowned. The earliest spring date on record for the Gambel's Sparrow is for Hastings, Adams County, March 31, 1925, and the average date in six springs in that locality is April 20. The earliest spring date for the White-crowned Sparrow at Hastings is April 9, 1925, and the average date in six springs is April 23. At Red Cloud, Webster County, both the Gambel's and White-crowned Sparrows first arrived in fourteen springs from April 23 to May 6, with the average (April 30) the same for both species. At Lincoln, dates of first arrival of the Gambel's Sparrow in eighteen springs are April 19, 1899 to May 10, 1924, and for the White-crowned Sparrow in sixteen springs are April 10, 1925 to May 10, 1924, the average date being May 1 in both cases. At Fairbury, Jefferson County, dates of first arrival in five springs are April 28, 1929 to May 8, 1925, averaging April 30, for the Gambel's, and April 16, 1928 to May 2, 1926, averaging April 24, for the White-crowned. These data show that in central Nebraska the vanguard of *gambeli* precedes *leucophrys* in the spring advance, while farther east in Nebraska the reverse is true.

Thus, between the plains bordering the foothills of the Rocky Mountains in Colorado, and eastern Nebraska, there is a great variation in the northward spring movement of the Gambel's and White-crowned Sparrows. In Colorado the Gambel's precedes the White-crowned by about four weeks; in central Nebraska it precedes by a few days; in eastern Nebraska it arrives at about the same time or a few days later than the White-crowned. In other words, as we proceed eastward from the main line of sharply northwestward migration of the Gambel's Sparrow, along the foothill plains, and it becomes

gradually less common, there is a slowing up of its northward movement, as compared to the White-crowned Sparrow, which moves both northwestward and northeastward on a broad front. The table at the end of this paper shows a similar slowing of the migration of the White-throated Sparrow from east to west. A slowing up of the northward movement of the Harris's Sparrow towards both the western and eastern peripheries of its regular migrational path is evident also from an analysis of the data on its migration presented by Swenk and Stevens (1929). This phenomenon is in fact observable in connection with the migration of many birds, and may be designated the *peripheral lag* of the migration movement.

The Gambel's Sparrow was last seen at Lincoln in four springs from May 13 to 18, an average date of May 15, while the White-crowned was last seen in five springs from May 11 to 18, an average date of May 14. The latest dates for the Gambel's are May 20, 1914, at Kearney (C. A. Black) and June 17, 1926, at Hastings (Mrs. C. W. McCaskill). The latest dates for the White-crowned are May 21, 1918, at Red Cloud (C. S. Ludlow), May 21, 1927, at Fairbury (Misses Callaway), June 9, 1919, at Kimball (Mickel and Dawson, 1920), and June 22 and 23, 1916, at Mitchell (do.). A study of all of the available data for several localities indicates that the range of dates of the spring migration for the Gambel's Sparrow is somewhat shorter than for the White-crowned, and that the migration reaches its crest somewhat more quickly. On the other hand, the bulk of the white-crown passes through somewhat more quickly than in the case of the Gambel's Sparrows.

Our four species of *Zonotrichia* move across eastern Nebraska in their migrations in a rather definite sequence. In the fall migration the White-crowned comes first, followed shortly by the White-throated and Harris's, the former preceding along the Missouri River, the latter farther west, and last of all arrives the Gambel's Sparrow. In the spring migration the Harris's Sparrow moves north first, during March. During the last week in April and the first few days in May the White-throated, White-crowned, and Gambel's move north, the White-throated preceding in eastern Nebraska, the Gambel's preceding in central and western Nebraska, the White-crowned slightly preceding the Gambel's in eastern Nebraska and slightly following it in western Nebraska. These relative movements of the four species may be shown in the following table of data, in which is given the number of years of observation and the average date first seen and average date last seen

for both the fall and spring migrations, in several Nebraska localities, for the Harris's, White-crowned, Gambel's, and White-throated Sparrows.

FALL MIGRATION

Harris's Sparrow

Sioux City:	19—Oct. 6	17—Nov. 11
Omaha:	6—Oct. 9	
Lincoln:	25—Oct. 7	12—Dec. 20
Fairbury:	4—Oct. 4	
Hastings:	4—Oct. 11	

White-crowned Sparrow

Sioux City:	9—Oct. 4	5—Oct. 15
Lincoln:	2—Oct. 2	6—Oct. 23
Fairbury:	3—Oct. 3	
Hastings:	1—Oct. 9	1—Oct. 16

Gambel's Sparrow

Lincoln:	9—Oct. 12	4—Oct. 29
Fairbury:	1—Oct. 17	1—Oct. 30

White-throated Sparrow

Sioux City:	11—Sept. 30	14—Oct. 25
Omaha:	3—Oct. 8	2—Oct. 30
Lincoln:	13—Oct. 8	11—Oct. 31
Fairbury:	5—Oct. 10	
Hastings:	5—Oct. 17	

SPRING MIGRATION

Harris's Sparrow

Hastings:	3—Mch. 14	
Red Cloud:	8—Mch. 21	
Fairbury:	2—Mch. 3	1—June 4
Lincoln:	20—Mch. 14	20—May 14
Omaha:	2—Mch. 20	6—May 10
Sioux City:	17—Mch. 29	21—May 17

White-crowned Sparrow

Hastings:	6—Apr. 23	1—June 17
Red Cloud:	14—Apr. 30	1—May 21
Fairbury:	5—Apr. 24	1—May 21
Lincoln:	16—May 1	5—May 14
Omaha:	5—May 3	1—May 14
Sioux City:	19—May 3	16—May 15

Gambel's Sparrow

Hastings:	6—Apr. 20	
Red Cloud:	15—Apr. 30	
Fairbury:	5—Apr. 30	
Lincoln:	18—May 1	4—May 15

White-throated Sparrow

Hastings:	6—May 2	1—May 18
Red Cloud:	11—May 2	1—May 13
Fairbury:	4—Apr. 23	1—May 15
Lincoln:	19—Apr. 25	16—May 11
Omaha:	5—Apr. 25	3—May 13
Sioux City:	21—Apr. 27	18—May 14

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STATUS OF GAMBEL'S SPARROW IN MICHIGAN

BY JOSSELYN VAN TYNE

One of the most interesting by-products of the bird-banding which has been carried on with ever increasing vigor in Michigan during the last ten years has been the great increase in our knowledge of the status of several of our rarer sparrows. Perhaps the most striking case is that of the Gambel's Sparrow (*Zonotrichia gambeli*) formerly unknown in the State and now found to be of regular occurrence. The credit for the discovery of the occurrence of this species in Michigan must go to a bird-bander, M. J. Magee. For, although his "specimen" was the fourth to be taken in the State, he was the first to differentiate it from the White-crowned Sparrow. When Magee wrote to the University of Michigan Museum in 1925 about his discovery, I examined the series of *Zonotrichia leucophrys* in the Museum collection and discovered the two Berrien County Gambel's Sparrows listed beyond. Gregory's specimen from Marquette County also passed as a White-crowned Sparrow until A. J. Van Rossem, happening to look through the Gregory collection, detected its true identity.

The known records of the Gambel's Sparrow in Michigan may be summarized as follows:

1918—May 6. Berrien County, Birchwood Beach. N. A. Wood, collector. No. 52252 Univ. of Mich. Museum of Zoology. Adult female.

1918—May 13. Berrien County, Birchwood Beach. N. A. Wood, collector. No. 52250 Univ. of Mich. Museum of Zoology. Adult male.

1924—October 12. Marquette County, Huron Mountain Club. S. S. Gregory, Jr., collector. No. 397 Collection of Stephen S. Gregory, Jr. Immature male. (*Auk*, 46, p. 244).

1925—May 21. Chippewa County, Sault Ste. Marie. Trapped and banded by M. J. Magee. (Wilson Bulletin, 38, 1926, p. 163). Identified by sketch sent to U. S. Biological Survey and to University of Michigan Museum of Zoology.

1927—May 5. Ingham County, East Lansing. Trapped and banded by J. W. Stack. Identified by Stack and Dr. K. Christofferson. Photograph sent to U. S. Biological Survey and University of Michigan Museum of Zoology.

1927—September 27. Chippewa County, Sault Ste. Marie. One trapped and banded by Magee. "A young bird; repeated the next day."—M. J. M.

1927—October 10. Chippewa County, Sault Ste. Marie. Two young birds trapped and banded by Magee.

1928—May 7. Chippewa County, Sault Ste. Marie. One adult trapped and banded by Magee.

1928—May 16. Chippewa County, Sault Ste. Marie. One adult male trapped and collected by Magee and sent to the U. S. Biological Survey. Now skin No. 61937 University of Michigan Museum of Zoology.

1928—May 18. Chippewa County, Sault Ste. Marie. One adult trapped and banded by Magee.

1929—May 12. Ingham County, Lansing. One trapped and banded by Fred E. Ludwig.

It is apparent therefore that the Gambel's Sparrow occurs in Michigan with some regularity. Since it is found in company with the more common White-crowned Sparrow and presumably comes as readily to banders' traps, the catch of the two species over a series of years should give some indication of the actual abundance of the Gambel's Sparrow. Mr. M. J. Magee has kindly furnished me with the following table of numbers banded by him at Sault Ste. Marie.

	Zonotrichia leucophrys	*Zonotrichia gambeli*
1925	16	1
1926	23	0
1927	15	3
1928	20	3
1929	20	0
	94	7

These figures indicate a Gambel's Sparrow population at the Sault of over seven per cent of the numbers of White-crowned Sparrows. In Berrien County in May, 1918, two of the three "White-crowned Sparrows" collected by N. A. Wood were *gambeli*. On the other hand sixteen skins from Washtenaw, Huron, and Tuscola Counties in southeastern Michigan in the University of Michigan Museum of Zoology are all *leucophrys* as were 220 trapped and banded by the Wing brothers at Jackson since 1925.

Now that it is known that the Gambel's Sparrow is to be expected in Michigan it will be interesting to see whether that knowledge will greatly increase the number of occurrences reported during the next few years.

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THE SEQUENCE OF THE MOLT

BY LYNDS JONES

Dr. Witmer Stone's paper entitled "The Molting of Birds, with Special Reference to the Plumages of the Smaller Land Birds of Eastern North America", published in the January issue of the *Proceedings of the Academy of Natural Sciences of Philadelphia* (1896, pages 108-167), is largely based upon museum specimens. It contains no detailed description of the sequence of molt in any species, and as the title implies, is primarily concerned with the sequence of plumages rather than with the molt proper.

Dr. Jonathan Dwight's paper entitled "The Sequence of Plumages and Moult of the Passerine Birds of New York", published in the *Annals of New York Academy of Sciences* (Vol. 13, 1900, pages 73-360), gives a generalized account of the sequence of the molt, but also is primarily concerned with the sequence of plumages.

It is my purpose, in this paper, to give in detail the sequence of the molt in the adult Bobolink as a typical representative of the Passerine birds in particular, and as a point of departure for making comparisons of the molt in other groups. The material that I have had to work on includes Gray Ruffed Grouse, Killdeer, Mourning Dove, Kingbird, Crested Flycatcher, Bobolink, Cowbird, Meadowlark, Bronzed Grackle, Vesper Sparrow, Song Sparrow, Towhee, Bank Swallow, and Catbird, all specimens in the flesh. In the cases of the Bobolink, Cowbird, and Bronzed Grackle many specimens representing all stages of the molt have been handled, and with the Cowbird and

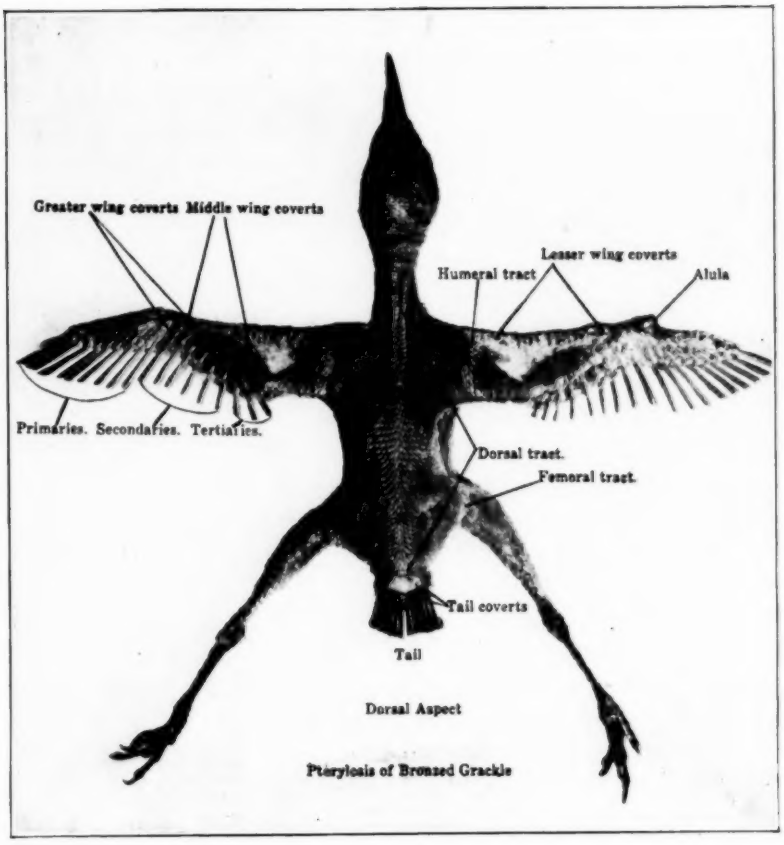

FIG. 3. Dorsal aspect of the Bronzed Grackle, showing pterylae.

Bronzed Grackle the college campus roost of these birds has furnished much valuable material.

Dr. Stone suggested that there is probably some individual variation in the order of the molt within the species, and in the handling of the abundant material in the three species of Icteridae I found this to be true, but only in exceptional cases, where the specimen was clearly abnormal in other respects, was this variation marked, so that it is possible to state that a certain order of molt is the normal one for a given species. It is this normal molt in the case of the Bobolink (*Dolichonyx orizivorus*) that I wish to give here.

Feathers from the various tracts which are lost at the same time are "grouped".

Group 1. Tenth primary and covert, central row of dorsal tract, central row of humeral tract, extreme forehead, outermost greater wing covert, innermost middle wing covert, a row on each side of the central row of the pectoral tract, the anterior row of the femoral tract. The 9th and 8th primaries drop so soon after the 10th that the other tracts merely lose more feathers so that the areas being molted spread. When the 7th primary is shed the lowermost and outermost lesser wing covert is shed, with a considerable spread of the dorsal tract laterally, at least three rows of the humeral tract, the forehead to near the crown, the pectoral tract has widened and extended forward to the throat and backward to include the abdominal tract.

Group 2. Sixth primary, all of the greater and middle wing coverts, the middle pair of tail feathers, the outermost upper and under tail coverts, under wing coverts, top of head, and the throat, with still more spreading of the other tracts before mentioned. With the fall of the 5th primary there is merely more spreading of the general molt.

Group 3. Fourth primary, outer secondary, 2d tertiary.

Group 4. Third primary, 2d secondary, 1st and 3d tertiaries.

Group 5. Second primary, 4th secondary, bastard wing.

Group 6. First primary, 5th and 6th secondaries, nape, and completion of molt of all other tracts, except scattered feathers in the general body plumage.

As both Dr. Stone and Dr. Dwight have pointed out, the order of molt is such that no part of the bird's body is left bare at any time, except that the forehead may be bare for a day or two. And at no time is the bird rendered flightless, or even tailless. But the tail feathers are shed in pairs rapidly and its upper and under coverts

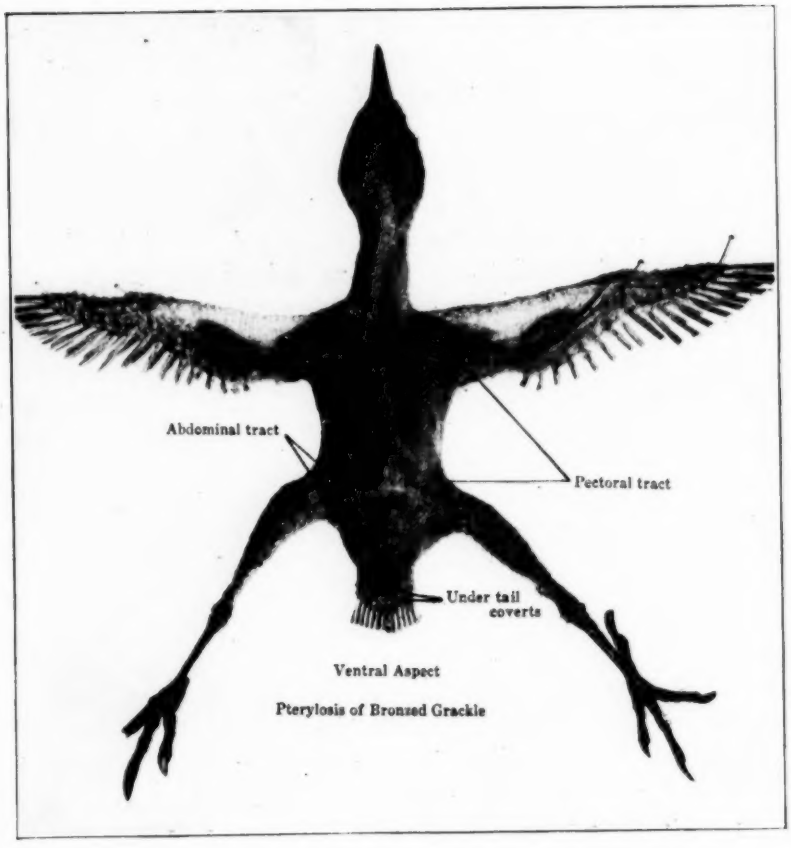

FIG. 4. Ventral aspect of the Bronzed Grackle, showing pterylae.

are shed as rapidly, so that for a short time the bird shows a stubby tail.

In working out the order of molt in the primaries I have given the innermost as number 10 for convenience. Of course some species have only nine; in which case the molt of the outermost, which would properly be called number 1, but in my annotation would be 2, marks the completion of the molt, except for the scattered body feathers mentioned. They seem to persist after the regular molt, possibly as an added protection to the body.

I have made use of groups of feathers involved in the several stages of the molt because there is some variation in the exact order of feather loss. Thus it is usual for the molt to begin in the middle of the expanded dorsal tract and from that center spread forward and backward in this tract, and for the 10th primary to drop out after this spreading has begun. The primaries and secondaries seem to be held in their sockets more firmly than are the body feathers, and therefore might often cling after they had been pushed partly out by the new feather.

I have no data on the length of time that it takes a bird to shed its plumage and get a new one. Banding might settle this point. But in any case birds banded during July and August ought to be examined for evidence of molt and the results recorded carefully.

It is assumed that the old feathers are pushed out of the follicle in which they grew as a necessary consequence of the growth of the new feather in the same follicle. Of course this is true, but I have good evidence that many of the old feathers are pulled out by the bird. In fact, I have seen them do it. Under the campus roost of the Bronzed Grackles and Cowbirds, an account of which occupies the whole of WILSON BULLETIN No. 15, feathers that were shed during the night littered the ground. I gathered the larger feathers every morning. I have a complete series of the primaries and tail feathers. Many of these feathers have a broken place on one of the vanes. I was unable to account for this until I saw a flock of Cowbirds that was waiting for an opportunity to steal into the roost, busily engaged in pulling feathers out of their plumage. When I gathered these feathers they had the telltale broken places in one vane. An individual that happened to be within ten feet of me was digging away at his wing, and when I saw him pluck the feather out and drop it I went at once and picked it up. It had the broken place in the vane. Of course I am not claiming that all the feathers are plucked out. Probably few of them are.

In the other Passerine birds the molt of which I have studied there is a close conformity to the method that I have given for the Bobolink. In most of the species there is no molt of the flight feathers in the young of the year. Just which species do molt all of the plumage is a topic for study.

I was surprised to find that while the Gray Ruffed Grouse shed its feathers rapidly the order of shedding was much the same as that of the Passerine birds. Likewise, the Mourning Dove had much the same order of molt, but its progress was so slow that a new feather was fully half grown before the one next to it was shed. The Killdeer did not show material differences in the order of molt.

It is well known that some ducks and gallinaceous birds shed their feathers so rapidly that they are practically naked and unable to fly for some days. The woodpeckers shed the middle pair of tail feathers last, and the Kingfisher has his own method.

As I have suggested above, study of the molting of birds can and ought to be a regular part of the bird bander's privilege. Many birds have partial molts at various times in the year. It would be well if every bird banded were examined for the purpose of determining whether or not it showed evidences of molt.

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BREEDING OF THE LEAST TERN IN IOWA

BY WILLIAM YOUNGWORTH

The Least Tern (*Sterna antillarum*) has been observed in the Sioux City region quite regularly by various persons during the summer months in recent years—perhaps for the last twenty years, at least. It usually appears during the last week of May, and remains often throughout August. There has been some local discussion from time to time as to the probability of the birds breeding here.

In 1885 Agersborg (*Auk*, II, page 289), writing on "The Birds of Southeastern South Dakota", and dealing with Clay, Yankton, and Union Counties, says of the Least Tern, "Summer resident; breeds".

W. W. Cooke, in 1888 ("Bird Migration in the Mississippi Valley", page 58), perhaps with the preceding report in mind, makes the following statement concerning this bird: "Chiefly coastwise, but passes up the Mississippi Valley to Dakota and Minnesota. Breeds abundantly along the Gulf coast in Louisiana and Texas; also in the interior; known to breed in Kansas and Dakota".

In 1915 Dr. Visher (WILSON BULLETIN, XXVII, page 324) refers to the same species as follows: "This interesting bird has nested regularly for many years along the Vermilion River, near the town of Vermilion, and also at the mouth of the stream, a few miles away. Nests have been found on several occasions. The colonies are small, consisting of not more than seven or eight pairs."

For several seasons Least Terns have been summer residents at a small lake within the city limits of Sioux City, Iowa. This particular lake is without islands or other suitable nesting sites, and the writer felt for a time that the birds were non-breeding birds.

The yearly return of the Least Terns in 1929 came on May 19, and from that date the birds were closely watched. A large sandbar in the Missouri River about one-half a mile from the lake, was discovered to be their home. During the early summer the adults began to carry minnows to this bar, to feed the young birds. It was noted that very little food was collected from the river, as this small lake apparently furnished an abundance of fish for both the young and adults.

On August 7 we heard a sort of begging call, and soon two young Least Terns were seen flying after some adults. They were guiding the youngsters to this fine feeding ground. These young terns were very awkward on the wing and their numerous clumsy dives were interesting to watch. The old birds brought several more fledglings from the river and soon all the young were resting on the water. The parents would fly to the young, alight on the water, and proceed to feed them with small fish.

The young terns, with their stubby tails, rather short full wings, and plump appearing bodies represented quite a contrast to their slender and graceful, winged parents. The hunt for food was over and as the sun slid behind the huge packing plants, which border little Half Moon Lake, the terns, young and old, arose in a loose flock and flew to their favorite sandbar for the night.

SIOUX CITY, IOWA.

BREEDING OF THE LEAST TERN ON THE MISSISSIPPI RIVER

BY ALBERT F. GANIER

I first became acquainted with the Least Tern (*Sterna antillarum*) on the Mississippi River near Vicksburg, Miss., where it is fairly common and well distributed. Upon its arrival in the spring it may be seen in flocks of from six to fifty, skimming the muddy waters in search of food or, for variety, repairing to the shallow sloughs, "old rivers", and barrow pits behind the levees. While it is untiring in

its flight, nevertheless it will alight on the sandbars, on drifting logs or, inland, on stumps or muddy shores. In its snow white dress, black cap and yellow bill, a more dainty or prim little bird could not be imagined. During the first few years of my acquaintance with this species I spent much time searching for its nest on the sandbars and other places it frequented, but without success. It was not until in later years that I realized my non-success was due to searching in May and early June and that these little terns usually delay their breeding until mid summer when danger from high water is over.

On Middle Bar, on the Mississippi River above Tiptonville, Tenn., I found my first nests in early June, 1921, but it was not until June 20 that they were found to have eggs. Two weeks prior to the latter date I found the little colony very much interested in a small area of the sandbar several hundred feet from the water's edge and well out from the willow growth. Many were sitting on the sand where there was an abundance of small scattered rocks and slag and on my approach, arose to join those in the air in noisy clamor. Careful search showed that no eggs had yet been laid but a number of little depressions had been formed in the sand. I marked the situation and secured from Albert Noll, my boatman, a promise that he would return at a later date and advise me of results. This he did on June 20, collecting two sets of two and three eggs respectively, which he forwarded to me and which are now in my collection. Incubation was estimated at four and eight days. I have had no opportunity to revisit this or other likely localities since then, at the proper season.

On August 3, 1928, Mr. Ben B. Coffey of Memphis, found four nests containing eggs on a Mississippi River sandbar, five miles north of that city. He has very kindly furnished me the data to include in this sketch. On July 31 he made his first visit to the bar, having waited for the unseasonably high water to subside, and found about fifty of the terns flying about. At their point of greatest interest he found several of the little depressions in the sand surrounded by many of their tracks. On August 3 he revisited the bar and found three nests containing two eggs each and another with one, all of which he left. There were thirty or forty of the terns about and, regrettably, four dead ones lay near by, having apparently been shot. Two days later he returned and found only two nests with two eggs and a single egg half covered by blown sand. These two sets which he collected and forwarded to me for preparation, proved to be incubated seven and nine days. Reckoning their total incubation period at 14-16 days, as given by Bent, it is apparent that they were deposited

about July 27 and 29. There was only one "indication" of a new nest on August 5. On this date there were about twenty of the Least Terns in the neighborhood. There were also four Black Terns on the bar, this being an unusually early date for their arrival. On August 3 and 5, there were also observed Wood Duck, Little and Great Blue Herons, and a number of small shore birds, unidentified for lack of time. The fisherman, in whose boat Mr. Coffey went to the bar, said that during his three years of residence there the terns had nested each summer.

On July 7, 1929, he again visited the above described nesting colony and found six nests, on slightly higher ground. One con-

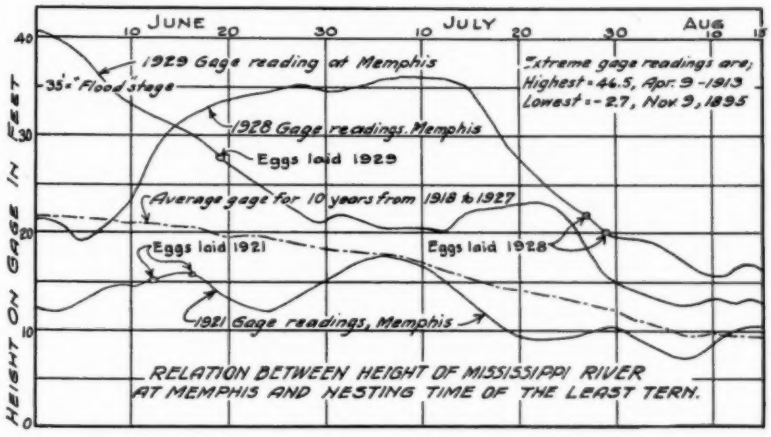

FIG. 5. Graph showing relation of nesting time of the Least Tern to the water level.

tained one egg, two held two eggs, while one held one young, two or three days old. Returning on July 14 he found thirteen occupied nests, including those of the previous visit. They were in two groups, about a hundred yards apart. Of eggs or young, one held three, seven held two, and five held one. A number of photographs were taken of the nests. On photographing the young they would stand panting in the sunshine for only a few moments and then run into the shadow of the photographer's leg. The nests were situated 150 to 200 feet from the water's edge. The following 1929 river data are pertinent. The bar emerged from the river on June 12 when the gauge read 32.0. The first eggs were laid June 19 with the gauge at 27.6. On the visit of July 7, the gauge read 20.2, and on the 14th it read 21.4.

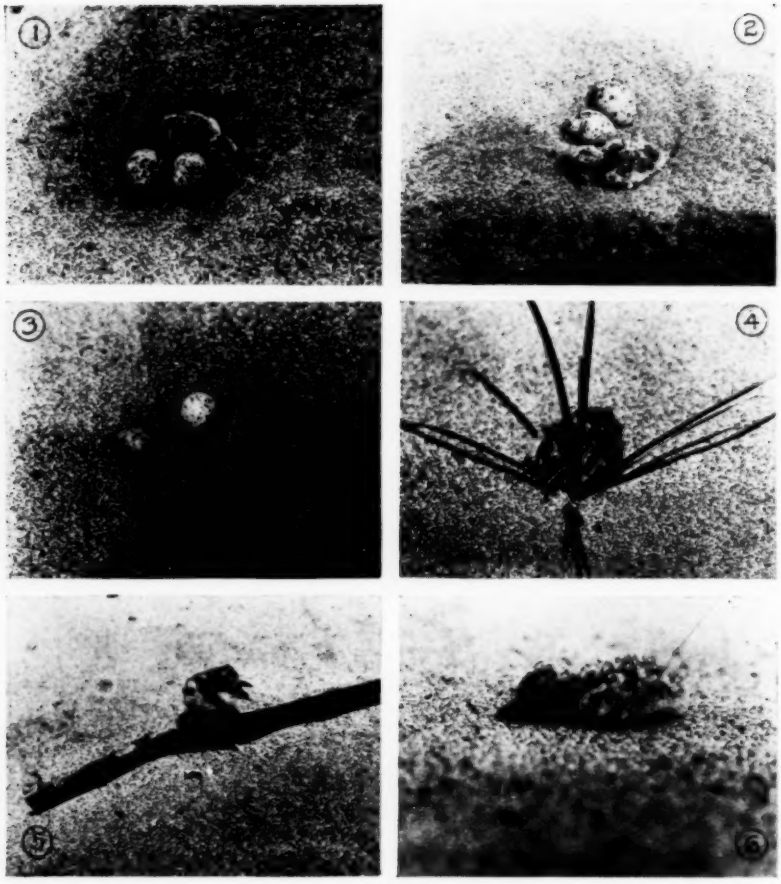

FIG. 6. Nests of the Least Tern near Memphis, Tenn. 1 and 2, eggs and young, six hours old, on the wind-blown sands. 3, two eggs in situ. 4, young seeking shade of blades of grass. 5, young showing effect of heat. 6, young at ease, about one day old.

A study of the Memphis River gauge chart (appended) shows the relation between the stage of the water and the nesting of this species, and that until the sandbars are well out of water no nests may be expected. The line of average for ten years past indicates that this date would be about June 18 or whatever date, after the middle of June, the water falls to around twenty-two feet on the gauge. It is probable that small nesting colonies of Least Tern may be found every ten or fifteen miles along the river and, due to isolation and such wide distribution, disturbance by humans should not be a great factor in their decrease. At the present time they seem to be holding their own. Sandstorms on the bars are frequent and it is likely that drifting sand covers and destroys many of their eggs and possibly young as well.

The present breeding range of the Least Tern is known to be from Massachusetts, along the South Atlantic and Gulf coasts and up the Mississippi as far as St. Louis. I am unable to find a specific breeding record, however on inland waters with the exception of Bent's quotation from Mabbetts's forty-year-old record near Natchez, and perhaps Bartsch's notes in the *Auk* for January, 1922, p. 101. The latter, on August 1, 1907, near Cairo, Ill., and on August 12, at the confluence of the Duck and Tennessee Rivers in Tennessee, observed these birds carrying food in their bills, supposedly to young birds on their nests. This food carrying habit, however, is by no means a sure index to the presence of nearby nests. The adult birds feed their young for weeks after they have left their breeding grounds and at such time they visit sloughs, ponds, lakes, and rivers far from their regular breeding places. Even prior to the nesting season, the birds have a pretty habit of feeding each other during the weeks of courtship. On Reelfoot Lake, Tenn., where these terns are common at that time, I have seen one of them sit on a floating log and be repeatedly fed by another, presumably its mate, and presumably a male, the sexes being alike. The recipient takes the attitude of a young bird, with wings quivering and half open. Mr. Coffey noted the same performance during June at Memphis.

NASHVILLE, TENN.

COMMON TERNS NESTING NEAR TOLEDO, OHIO

BY LOUIS W. CAMPBELL

Little Cedar Point, Lucas County, is the tip of a peninsula ten miles northeast of Toledo extending one and a half miles north into Lake Erie. This peninsula, forming the dividing line between the Lake and Maumee Bay on the south side, consists of marsh land with a higher border of sand beach. As this marsh is owned by a hunting club, and is not open to the public, the point itself is accessible only by water. The writer, however, received permission to cross the hunting club grounds and all trips to the Point were made on foot. Little Cedar Point consists roughly of a sandbar 1500 feet long and 250 feet wide. About 1000 feet from the end of this bar is a narrower place through which the lake storms at times cut a channel approximately 100 feet wide, in which the water is from a few inches to three feet in depth depending on the direction of the wind. This year, because of high lake levels and northeast winds, this channel was open from April to August, cutting off the end of the point from the mainland. Half-way between this cut and the end of the bar is a small house in which fishermen dwell most of the year.

On June 9, 1929, there were about fifty Common Terns (*Sterna hirundo*) at the Point. Seeing that quite a few were performing their mating antics, I determined to revisit the location at a later date. Returning on June 20, I was surprised to find the number of terns increased to 500 with 200 or more sets of eggs, all located near the end of the sandbar. July 7 found the eggs unhatched, but on August 4 there were fifty-five young, in all stages from tiny chicks just out of the egg to juveniles barely able to fly. A number of eggs had been destroyed by the severe storm of July 19. On August 10 many young birds were still unable to fly but no newly hatched ones were seen. By September 2 all were at home in the air.

The nesting of this little colony of Common Terns is probably the first record for the mainland of the state of Ohio, although, as I have shown, the site was technically an island at the time. With regard to the distribution of the species in this district, Professor Lynds Jones in his "Birds of Cedar Point and Vicinity" (1910), states, "The only breeding places thus far discovered are upon Big and Little Chicken Islands and upon the reef of Chick when it is sufficiently uncovered by water; upon North Harbor, Starve Island, the gravel ridge at the west end of Middle and over the top of the Rattle of Rattlesnake Island." Of these, only Starve Island and Rattlesnake Island are within the boundary of the United States.

Whether or not the Common Terns have ever nested previously at the Little Cedar Point, I, personally, am unable to say, as this is the first year I have had access to the place. An old fisherman, told me, however, that there had been a colony once before, "many years ago" during a period of high water. The most obvious explanation of this year's nesting would be that the high lake levels had cut down the usual breeding areas and driven the birds to new locations. Another fact that would seem to show that the terns were desperately in need of a nesting site is that the fishing shack, inhabited by several men, was within 300 feet of the nearest nest. These fishermen pulled their nets daily and their boats plied back and forth to the city of Toledo. When one considers the inherent shyness of colony-nesting birds, the courage of this group is worthy of note.

TOLEDO, OHIO.

A LETTER FROM ROBERT RIDGWAY

BY FRANK L. BURNS

The following letter from Robert Ridgway, written so short a time before his death, contains some information that will be of general interest; and it is with the thought of sharing this information with the many admirers of Mr. Ridgway that I offer the letter for publication.

LARCHMOUNT
1030 South Morgan Street
OLNEY, ILLINOIS

December 31, 1928.

Mr. Frank L. Burns,
Berwyn, Pennsylvania,

My dear Mr. Burns:

In reply to your inquiry of the 28th inst., just received, I have to say that it is impossible for me to forecast the appearance of the two as yet unpublished volumes of "Birds of North and Middle America." My work on Part 9 has been completed for some two or three years, and in the preparation of Part 10, the concluding volume, I am now on the home stretch. If my health and strength hold out this should be completed by the end of next summer, at the farthest. I think it is not fully realized by most people who are interested that the labor of preparing this book is becoming more difficult each year. This is caused mainly by the enormous increase in ornithological literature, all of which has to be studied and bibliographical refer-

ences made, but I am now handicapped by the inability to work as steadily as I formerly could—in fact have reached an age (79 years on my next birthday) when it would be better for me if work of this kind should be dropped altogether.

My own part in the completion of the last two volumes will, necessarily, consist in the treatment of the higher groups (down to families only in Part 10 but to genera in Part 9, with compilation of full synonymies down to subspecies in both); in other words, the real labor, indeed the drudgery, leaving for others the interesting work of describing the species and subspecies. Naturally, I wish that it were possible for me to do the latter myself, but, obviously, I cannot.

Very truly yours,

ROBERT RIDGWAY.

CHIMNEY SWIFT BANDING OPERATIONS AT CHATTANOOGA

BY WYMAN R. GREEN

We have confined our bird banding operations at Chattanooga almost wholly to Chimney Swifts (*Chaetura pelagica*) for the reason that these birds visit our city in tens of thousands. It seems to be a favorite stopover place for them. Especially in September and October they come in enormous numbers, on their way south. Most of our operations so far have been during these two months. Not so many are observed as they pass on their way north in the month of May. Possibly their north and south migrations are not over the same route.

There are many chimneys available in Chattanooga and a large number are used. It is a veritable paradise for anyone interested in the banding of Chimney Swifts. We first began our operations in October, 1928, when the birds were moving south. We banded a few again in May as they passed through going north, and in September and October of 1929 we again set our traps and banded on a more extensive scale, as the swifts were returning southward.

The accompanying tabulation summarizes the banding operations to date so far as our local work is concerned.

It will be noted that a total of 3,737 swifts were banded during the period from October 16, 1928, to October 19, 1929. During this time we captured seventeen swifts that had been already banded by other operators. Throughout the whole of our banding work we have had fifty-four returns. It is significant that on October 8, 1929, we had at least one return from each of our three previous catches. Also

on October 19, 1929, we had at least one return from each of our four previous catches. That we had no returns on May 25, 1929, when we banded only ninety-one birds is not specially significant, since the number of birds examined was so small, while at each succeeding catch we examined from about 1,000 to 5,000 birds.

Unfortunately we were obliged to set free nearly 9,000 swifts, as our tabulation shows, without banding them, because we were not able to get sufficient bands. We hope that this handicap can be removed before resuming the work again.

Perhaps the most interesting aspect of this work emerges when we consider the birds taken which have been banded by other workers. Of these we have taken seventeen. Three of our birds have been taken elsewhere. Of the 1,000 swifts banded October 16, 1928, two have been reported as taken in Canada. Bird No. B72,601 was captured by Mr. E. J. Pifher, at Trout Lake, North Bay, Ontario, June 21, 1929, (See Fig. 8). This is about half way between the eastern end of Lake Erie and the south point of Hudson Bay. Bird No. B72,496 was taken three days later at Markstay, Ontario, by Mr. A. Chevrier. It is rather remarkable that these two birds banded at Chattanooga at the same time, should be taken eight months later within three days of the same date, in Ontario. The only other one of our birds that we have heard from so far was another one banded at the same time as these two, but which was taken only five months later at Decatur, Tenn., by Mr. Noah Bales.

Of the seventeen banded birds we have taken during our operations thirteen were banded at Charleston, W. Va., by Mr. I. H. Johnston. Two of these we took in October, 1928. One had been banded in 1926 and the other in 1927.

Among the 7,000 swifts trapped in September, 1929, were eight others which had been banded by Mr. Johnston in the years 1927 and 1928. There was also one that had been banded at Kingston, Ontario, in June, 1929, by Mr. R. O. Merriman, another banded at Thomasville, Ga., in October, 1926, by Mr. H. L. Stoddard, and another banded at George School, Pa., in May, 1927, by Mr. John Bartram.

Among the 2,700 trapped in October, 1929, were three more birds banded at Charleston, W. Va., by Mr. Johnston, in 1926 and 1927, and one which is of special interest, was banded at Lafayette, Ind., in September, 1929, by Mr. S. E. Perkins.

Only eleven days later we set our traps for the last time this season and captured 955 swifts, but none of these wore bands that had been placed on by other workers. There were, however, thirty

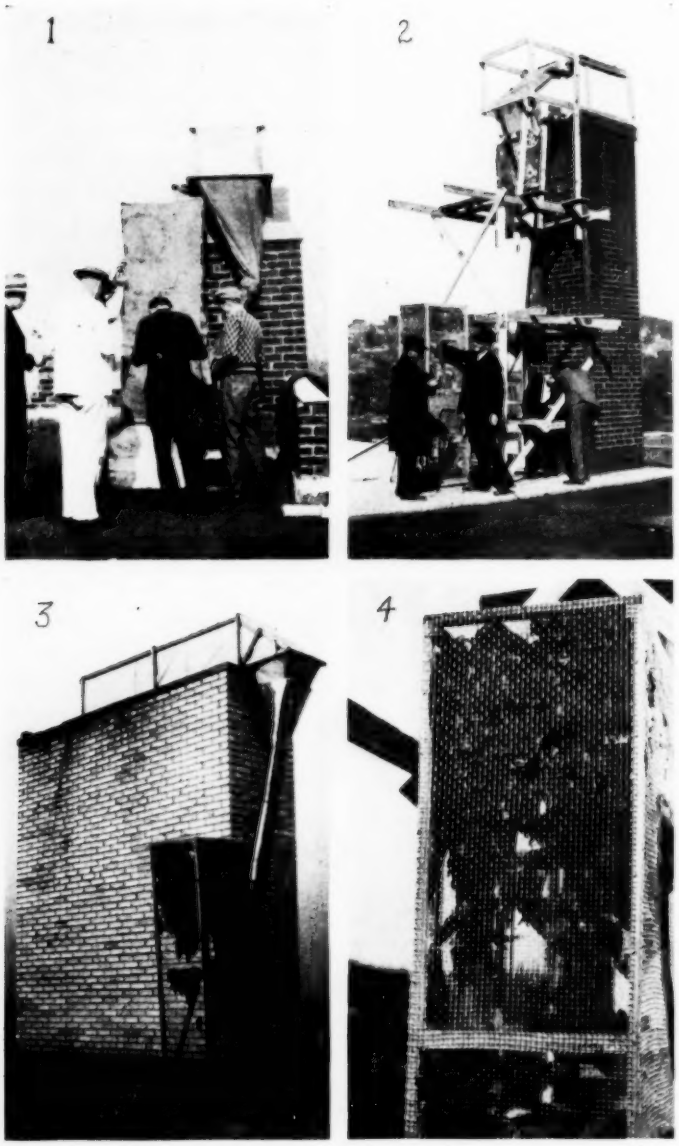

FIG. 7. Chimney Swift banding operations at Chattanooga. 1, the author, in white, and students at work on the roof of the main building of the University of Chattanooga. 2, a temporary trap on the Clemons Bros.' furniture store. 3, trap and receiver containing about 800 Chimney Swifts. 4, close-up view of one of the receivers showing how the swifts cling to the walls. 1 and 2 by Henry Howard.

birds that bore bands that we had placed on them. Of these a few were from each of our four previous catches.

We have used a considerable variety of traps, as to shape, size, and construction. Naturally the size and type of trap may be conveniently modified to suit the particular chimney on which it is to be used. The accompanying illustration (Fig. 7) shows one of our most satisfactory traps and a receiver which is designed to hold several thousand birds. In general our traps have all resembled the one here shown, being much the same as other banders are using. (See Miscellaneous Publication No. 58, of the United States Department of Agriculture). Hence a detailed description would be entirely superflous. In all of our traps we have used a transparent sheet of celluloid at one end. Our experience indicates that it is better to place this sheet at an angle, say of forty-five degrees, rather than to have it strictly vertical as it is in all of the traps of other workers, so far as I am informed. This arrangement deflects the birds downward into the funnel, or hopper, the first time they strike the sheet. In my previous traps, with sheet vertically placed the birds would often flutter against the sheet and then try to find a place to alight in the cage. In my first experience my trap walls became practically lined with swifts. I remedied this in part by substituting black oil cloth for the burlap walls of the trap, and by eliminating all roughness inside the traps.

By considering a certain habit the swifts have on entering the chimneys in the evening one can appreciate the great importance of maintaining an unobstructed right of way through the trap into the receiver when the birds once decide to come out of the chimney. Perhaps everyone has observed that the swifts circle about for a time in the evening before starting into the chimney. Then in cases where there are thousands of birds concerned a few will dart in, literally pouring in for a few moments, but it will be observed that the rate of entrance slows down perceptably, and after a few seconds, completely ceases for perhaps half a minute, or even longer sometimes. I imagine that this is to give those that entered time to get settled in their places. Then the process is repeated, until the last bird enters. So when the birds are coming out if the passage becomes the least bit obstructed by fluttering birds this same instinct operates, as I believe, to call a halt, until the fluttering birds either fall down the shute or find a perch in the cage, or possibly go back down the chimney again. It is obvious that if possible all of the flock should come out at their first attempt.

FIG. 8. Eastern portion of North America which is involved in this study of Chimney Swifts. The banding was done at Chattanooga, Tennessee (Ch). Birds were taken which had been banded at Thomasville, Georgia (T), Lafayette, Indiana (L), Charleston, West Virginia (C), and at Kingston, Ontario (K). Some of the birds banded at Chattanooga were taken later at North Bay, Ontario (NB). The study indicated a number of migrations of minor importance which are not shown on the map. It will be seen that returns up to date indicate a certain degree of convergence of Chimney Swifts in the fall migration. Obviously banding stations are needed in northeastern Canada, southern Florida, the West Indies, Central America, and South America.

In the case of tall chimneys it is very inconvenient if the swifts congregate in the trap. We believe that with the transparent sheet placed at an angle as indicated there will be very few birds which ever strike it a second time before being deflected into the funnel leading to the receiver.

Now let us consider a few details with reference to the receiver or gathering cage. If one is trapping on a large chimney which may harbor 6,000 or 7,000 swifts at one time he needs a large receiver or several small ones which can be easily handled. An essential feature of a receiving cage is that it must provide ample room for all of the birds in it to cling to its walls. If swifts are allowed to flutter about in the trap and become partially exhausted before coming into the cage, they may accumulate on the floor of the receiver and smother. After experience indicated the necessity I made the large cage shown in the illustration. It is about seven feet tall and approximately two feet in the other two dimensions. We have found it more convenient to use a single large receiver. When several thousand birds come out in a few minutes one is saved the trouble of changing the cages. Every little saving counts when one has several thousand birds to band.

All four sides and the two ends are made of one-half inch mesh hardware cloth. The bottom, being constructed of the same material as the sides and top, makes it possible for the few birds that do become exhausted and drop to the bottom of the receiver, to get plenty of air and thus avoid suffocation. The receiver, in case there are many birds, should be slightly raised off the ground so there is the most complete ventilation for the swifts that may come to rest on the floor of the cage.

With a cage which is tall several men may stand about it and inspect the legs of the birds attached to its walls for specimens which are already banded. Very little or no stooping is necessary.

In a receiver of this size it is convenient to have four openings for removing the swifts. They should be about nine inches square. In a cage six or seven feet tall they should be placed, one in each of the four walls, so that all parts of the cage may be easily reached. This desideratum is realized when two of them are located about eighteen inches from the bottom in opposite walls, and the other two are about four feet from the bottom, opposite each other, in the other two walls. Thus half a dozen workers may have ample access to the birds at the same time and not be in each other's way.

Tabluation of the Data on Banding Chimney Swifts

DATA ON LOCAL BANDING				DATA ON CHIMNEY SWIFTS BANDED ELSEWHERE			
Date and Station	Birds Banded Numbers Used	Released Not Banded	Bearing Local Bands	Bearing Strange Bands	Place of Banding	Date of Banding	By Whom Banded
Oct. 16, 1928 Old H. S.	1000 B72001 to B73000	900	None	2 LSURV 19735	Charleston W. Va.	Sept. 18, 1926	I. H. Johnston
				BISURVB 15195	Charleston W. Va.	Sept. 15, 1927	I. H. Johnston
May 25, 1929 Univ.	91 C6410 to C6588	None	None	None			
Sept. 21, 1929 Univ.	1500 623301 to C25000	5500	8 banded Oct. 16, 1928 B72285 B72286 B72041 B72541 B72594 B72431 B72873 B72039	11 BISURVA 82771	Thomasville, Ga.	Oct. 1, 1926	H. L. Stoddard
				BISURVB 1265	George School, Pa.	May 26, 1927	John Bartram
				BSURVB 14419	Charleston W. Va.	Sept. 15, 1927	I. H. Johnston
				BISURVEY 14983	Charleston W. Va.	Sept. 15, 1927	I. H. Johnston
				B14094	Charleston W. Va.	Sept. 15, 1927	I. H. Johnston
				C28449	Charleston W. Va.	Sept. 15, 1927	I. H. Johnston
				C28640	Charleston W. Va.	(?)	I. H. Johnston
				C27800	Charleston W. Va.	(?)	I. H. Johnston
				C28596	Charleston W. Va.	(?)	I. H. Johnston
				A107321	Charleston W. Va.	Sept. 14, 1928	I. H. Johnston
				B97875	Kingston, Ontario	June 7, 1929	R. O. Merriman
Oct. 8, 1929 Clemons	1146 C32001 to C32197 and C36051 to C37000	1559	11 banded Oct. 16, 1928 B72039 B72098 B72118 B72122 B72486 B72575	4 BISURV 15978	Charleston, W. Va.	Sept. 15, 1927	I. H. Johnston
				BIOLSURV 197202 (both on same bird)	Charleston, W. Va.	Sept. 17, 1926	I. H. Johnston

Tabulation of the Data on Banding Chimney Swifts—*Continued*

DATA ON LOCAL BANDING				DATA ON CHIMNEY SWIFTS BANDED ELSEWHERE			
Date and Station	Birds Banded Numbers Used	Released Not Banded	Bearing Local Bands	Bearing Strange Bands	Place of Banding	Date of Banding	By Whom Banded
			B72694 B72789 B72809 B72849 B72970	BISURV 14860 BISURV 14112 BIOLSURV 469234	Charleston, W. Va. Charleston, W. Va. Lafayette, Ind.	Sept. 15, 1927 Sept. 15, 1927 Sept. 6, 1929	I. H. Johnston I. H. Johnston S. E. Perkins
			2 banded May 25, 1929 C6463 C6499				
			4 banded Sept. 21, 1929 C23586 C23717 C23867 C24893				
Oct. 19, 1929 Central H. S.	None	955	7 banded Oct. 16, 1928 B72378 B72398 B72497 B72593 B72602 B72665 B72746	None			
			1 banded May 25, 1929 C6446				
			9 banded Sept. 21, 1929				
			13 banded Oct. 8, 1929				
Totals	3737	8914	54	17			

Note: Three swifts banded October 16, 1928 have been recaptured elsewhere: B72601 by E. J. Pifher at Trout Lake, North Bay, Ontario, June 21, 1929; B72496 by A. Chevrier at Markstay, Ontario, June 24, 1929; B72707 by Noah Bales, Decatur, Tenn., April 20, 1929.

A narrow strip of tin may be bent around the edges of these doors to cover the cut edges of the hardware cloth, so as to avoid the possibility of tearing the clothing when reaching in after the birds. A piece of burlap about fourteen inches square is hung over each door on the inside of the cage. This effectively prevents the escape of the birds and makes easy their rapid removal.

In closing, let us consider briefly some plans for the future. Since the swifts do not always go to the same chimney each evening but use several different roosting places, we have planned to do some experimenting, when they return again next year, to determine the extent of these local movements. We hope to organize our men into groups, so that we can trap all of the birds at the different chimneys the same day, at intervals for the month or two that the swifts are present. Several objects would be accomplished by this procedure. Aside from discovering the local movements we can determine how long individual birds remain in the locality, and most important of all, we will have an opportunity to band every unbanded swift that visits the region.

We hope soon to get in touch with everyone in America who is interested in swift banding. With the co-operation of many workers much can be accomplished in a very short time with birds like these that can be banded in such enormous numbers. There is an enthusiastic group of workers in Chattanooga. We are definitely planning to become the blue-ribbon swift banders of America. We intend to band from 10,000 to 20,000 swifts by the end of October, 1930. I realize that it is a hazardous thing to announce our ambition, but if this announcement inspires a formidable competitor in this field, or indeed a score of them, so much the better. In the interest of our common objective they will all be welcome.

University of Chattanooga,
Chattanooga, Tenn.

SOME NEW BIRDS FOR OKLAHOMA FROM OKMULGEE AND TULSA COUNTIES

BY EDITH R. FORCE AND W. H. KOONS

The purpose of this account is to amplify the records of the bird life of Oklahoma. These records are of especial interest because the geographical position of the state makes it a region of unique climatic changes, for it is the cross roads of the humid east and the arid west, of the cold north and the warm south. For this region a wide range in

the variety of habitat and birds may reasonably be expected. Comparatively few ornithological records of this region have been made. Therefore it is hoped that this account will be of use in the compilation of a more complete check-list for eastern Oklahoma.

Of the nine species and subspecies listed herein, six are first records for the state, and the other three the only specimens of which there is known to be a record.

With the exception of the Magnolia Warbler, which is a sight record, the specimens have been collected in Okmulgee and Tulsa Counties and the disposals indicated. The identifications have been made by Dr. H. C. Oberholser, Bureau of Biological Survey, Washington, D. C., and Dr. Frank M. Chapman, American Museum of Natural History, New York City. Grateful acknowledgment is made for this assistance in the identifications, as well as for the inspiration and advice of Mrs. Margaret M. Nice upon whose suggestion the present account was undertaken.

GREAT BLUE HERON. *Ardea herodias herodias.* Transient. One specimen (O. H. S. No. 46) was collected by W. H. Barton in the fall of 1924 and another, (O. H. S. No. 113) by Renola Bonstein, October 10, 1925. This latter specimen was destroyed after it, together with the O. H. S. No. 46, had been identified by Oberholser. This bird is at present in the High School Museum, at Okmulgee. It is a new state record. November 5, 1925, a specimen was collected in Oklahoma County by Ralph Miller, and identified by Oberholser. The specimen is in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. "*A. h. wardi* is the form of the Great Blue Heron that breeds in eastern Oklahoma. Kirn reports a colony in Osage County and Prier states that it breeds in Cherokee County."* Frequent sight records have been made between spring and December 1, since the year 1924 in Tulsa County (Koons). Mrs. A. Gilmore, taxidermist, in the city of Tulsa, has a male and female (A. G. Nos. 68a and 68b), a nest and a set of four eggs collected in Tulsa County, March 15, 1923, which are undoubtedly *A. h. wardi.*

KRIDER'S HAWK. *Buteo borealis krideri.* A male was collected in the winter of 1923-1924 by W. H. Barton, and recorded as O. H. S. No. 89. Another male (O. H. S. No. 94) was shot by R. E. Francis, a poultry raiser, as the hawk was capturing a Leghorn hen. The stomach contents of the hawk revealed an adult undigested mouse. Specimen O. H. S. No. 94 is very light in color as compared to the fuscous specimen collected earlier. They are both in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. These are the

first specimens of this subspecies identified for Oklahoma. Since then a skin in the University of Oklahoma has been referred to this form by Oberholser; it bears the data, "0-69, male, October 15, 1924, Bryan County.—E. D. Crabb."

Eastern Grasshopper Sparrow. *Ammodramus savannarum australis.* Transient. A male (O. H. S. No. 6) collected by Mark Moore, Jr., and Edith R. Force, October 15, 1926, is a new state record. The specimen after being identified by Oberholser was placed in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. The breeding Grasshopper Sparrow of this region belongs to the western subspecies; specimens taken in the summer near Tulsa have been identified by Dr. A. Wetmore.* In the collecting it was very easy to get within four feet of this bird, as it fluttered along close to the ground in the dry grassy meadow, about 4 P. M. A number of them were seen later on the sunny hillside. Mrs. W. D. Elrod, Okmulgee, Oklahoma, records the Grasshopper Sparrow in a list of birds seen close to Christmas, 1925. W. H. Koons observed the Grasshopper Sparrow on a frozen mud hole January 18, 1925, evidently attempting to get a drink of the water he could see below.

Magnolia Warbler. *Dendroica magnolia.* Rare transient. One individual observed April 13, 1924 (Koons). This is a new state record. It is one of the "birds whose occurrence is to be expected." "In Kansas a rare transient; in Arkansas one recorded by Smith in Washington County, May 22, 1924, while Warren collected one in Baca County, Colorado, May 12, 1905."*

Montana Junco. *Junco oreganus montanus.* Winter resident. A male collected by W. H. Koons, March 4, 1925, was photographed, painted and later sent to Oberholser who identified it as belonging to this subspecies. This bird is abundant every year. In 1924 one could count at least a thousand in a three mile tramp along the base of the cliffs of Lost City, Tulsa County. They were extremely numerous that year in many places within a radius of ten miles of the City of Tulsa. They were again numerous during the winter of 1926-1927, but not nearly so many as in 1924. This is a new state record.

Swamp Sparrow. *Melospiza georgiana.* Transient and winter resident. A specimen collected by W. H. Koons March 20, 1926, was photographed and painted by him and sent to Oberholser, who stated it belonged to this species. Although numerous sight records have been listed,* this is the only specimen of which we have a positive identification.

TENNESSEE WARBLER. *Vermivora peregrina.* Transient in eastern part of the State. A specimen collected April 27, 1927, by W. H. Koons was sent to Chapman, who identified it as this species. It is the only specimen recorded. Several others have been seen the last of April and the first of October each year since 1924, the last observation being October 10, 1927 (Koons). Mrs. Nice records having seen others near Talequah, May 6, 1923.*

GRAY-CHEEKED THRUSH. *Hylocichla minima aliciae.* Uncommon transient. A male (W. J. H. No. 58) was collected May 2, 1927, by W. H. Koons at Sand Springs, Tulsa County, and photographed and painted by him and sent to Oberholser for identification. The specimen, which is the only one on record for the State, is in the collection of the Wilson Junior High, Tulsa, Oklahoma. Several sight records have been made as follows: "Cherokee County—fairly common, May 5-6, 1923 (Nice); Cleveland County—uncommon spring transient, seen between April 27 and May 9 (Nice); Beaver County—rare migrant at Gate (Lewis)."*

SOUTHERN ROBIN. *Planesticus migratorius achrusterus.* Resident. One specimen (O. H. S. No. 30) was collected in the spring of 1924 in Okmulgee County and is in the Okmulgee High School Museum. Another (O. H. S. No. 116) collected on May 4, 1926, from the same region is in the University of Oklahoma Museum of Zoology, Norman, Oklahoma. A male (W. J. H. No. 29) collected March 12, 1927, at Joe's Station, Tulsa County, by W. H. Koons is in full spring plumage. An immature male (W. J. H. No. 43) was collected April 4, 1927, by Harry Williams. Both of these, which are in the collection at the Wilson Junior High School, Tulsa, have been identified by Oberholser as belonging to this subspecies. Mrs. A. Gilmore, taxidermist, of Tulsa, collected an immature male June 15, 1927, and a nest with five eggs, April 29, 1927. She states they nest any time between March and May. Other nestings were reported May 18, 1926, in Okmulgee County. The Robins are abundant in eastern Oklahoma. December, 1926, flocks containing immature birds were seen in Okmulgee County (Force). This is a new state record, since the specimens previously identified belonged to *P. m. migratorius* and *P. m. propinquus.*

TULSA, OKLAHOMA.

*Nice, Margaret Morse, and Leonard Blaine. 1924. The Birds of Oklahoma. University of Oklahoma Bull. No. 286.

RECENT BIRD RECORDS FROM NORTHEASTERN COLORADO AND THEIR SIGNIFICANCE IN CONNECTION WITH GEOGAPHICAL DISTRIBUTION

BY F. L. FITZPATRICK

Introduction

The present paper deals with the bird life of the plains region of northeastern Colorado, a broad level area traversed by the South Platte River and its tributaries which have their origins in the mountain streams of the Eastern Slope.

It must be remembered that this area, although in itself large, is but a small portion of the State of Colorado. Some species of birds common to the southern part of the State are uncommon or absent in this region. And of course a much different avian fauna is found in the mountains of the western portion of Colorado. Necessarily, some of the species that nest in the mountains during the summer are found on the eastern plains during the migration seasons. However, the most common north and south migration route follows the foothills region of the Eastern Slope. As will be noted from a study of the appended notes many of the earliest spring arrivals were seen in this zone. So the migrating birds tend to follow a fairly well defined route and do not spread out across the eastern plains indiscriminately. Sclater, (1912), records 392 species of birds from Colorado of which 106 are rare or casual and 167 are non-breeding migrants.

The investigations upon which these notes are based were carried on in 1924 and 1925 when the writer was a member of the Faculty of Colorado State Teachers College, located at Greeley. Greeley is situated in the plains region, some thirty miles east of the foothills and on the eastern edge of the migration route already referred to. Its location marks the junction of the South Platte and the Cache la Poudre Rivers and there are many ponds, lakes and reservoirs in the surrounding region which is largely irrigated and under cultivation.

The notes and records are drawn from almost daily observations made in or within a fifteen-mile radius of Greeley except in those instances wherein other localities are specifically designated. In making the observations all sorts of places were visited, particularly lakes, ponds, groves along the rivers and creeks, dry sagebrush land, parks, and city streets. One interesting and noteworthy fact is that a large majority of the smaller birds live in the near vicinity of towns or farm groves, obviously because of the presence of bushes and trees

in these localities. Not all of the species in the region came under observation. For instance, the smaller marsh-dwelling forms such as rails were not sought in the course of the investigation. Nevertheless, the observations form a fairly accurate basis for determining the relative abundance of most species and some of the records appear to have special significance in connection with geographical dissemination.

Faunal List

Pied-billed Grebe. *Podilymbus podiceps.* The status of this species in northeastern Colorado seems to be somewhat indefinite but it is not supposed to be as common as the Eared Grebe, *Colymbus nigricollis californicus.* Strangely enough no members of the latter species were recorded but a pair of Pied-billed Grebes were observed near Greeley on April 15, 1924.

Ring-billed Gull. *Larus delawarensis.* A common migrant.

Bonaparte's Gull. *Larus philadelphia.* Sclater, (1912), gives a half dozen fall migration records for this species. The writer has one record, May 29, 1924, near Julesburg.

Forster's Tern. *Sterna forsteri.* This species is a fairly common summer resident in northeastern Colorado. Observations indicate that it has considerable value as an insect-destroying species in this region. Flocks of these birds fly about over the fields seeking grasshoppers and other insects throughout the summer.

Black Tern. *Chlidonias nigra surinamensis.* A common summer resident in Weld County.

Merganser. *Mergus americanus.* One record near Eaton, October 9, 1924.

Mallard. *Anas platyrhynchos.* Sclater, (1912), termed this species the most common duck in Colorado. In the plains region it was seen commonly from April to July and from October to December.

Gadwall. *Chaulelasmus streperus.* This species proved to be very common in Weld County and remained to nest in some of the shallow lakes during the summer.

Green-winged Teal. *Nettion carolinense.* A common migrant and a summer resident. Most common during April and October.

Blue-winged Teal. *Querquedula discors.* A common migrant and resident. The largest numbers of this species were observed during the fall migration, October 9, 1924 .

Shoveller. *Spatula clypeata.* One record, June 8, 1924, at Julesburg.

PINTAIL. *Dafila acuta tzitzihoa.* A common migrant. In the fall this species gathers in large flocks, frequenting the lakes near Loveland in the daytime and repairing nightly to the nearby wheat fields to feed.

CANVAS-BACK. *Marila valisineria.* One record of eight individuals, near Greeley, October 9, 1924. No records of the supposedly more common Redhead, *Marila americana*, were obtained.

LESSER SCAUP DUCK. *Marila affinis.* Fairly common during the migration season, especially in April and November.

CANADA GOOSE. *Branta canadensis canadensis.* Fairly common as a migrant.

BITTERN. *Botaurus lentiginosus.* This species was twice recorded; June 14, 1924 and July 21, 1924.

GREAT BLUE HERON. *Ardea herodias.* One of the most common birds in northeastern Colorado. The earliest spring record was April 15, 1924. This species nests in colonies together with the Black-crowned Night Heron. One of these colonies was visited by Dr. F. C. Jean of Colorado State Teachers College and the writer in 1924. It was located on the Cache la Poudre River near Windsor. The colony was about a third of a mile in length and the nests were located in the tops of the cottonwoods and willows on both banks of the stream. One moderately large tree contained nine nests and from four to five nests were found in many trees. This particular colony has evidently been in existence for some time because items in the literature of the region make occasional reference to it. Another smaller heronry was located on the eastern bank of the South Platte River some twenty miles east of Greeley. The subspecific status of this heron was not determined.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius.* Also a very common summer resident.

SANDHILL CRANE. *Grus mexicana.* One record from Chamber's Lake. This locality is in the mountains but the record is included because this species is so rare.

COOT. *Fulica americana.* A common migrant and summer resident. Recorded from Julesburg, Loveland, Greeley, and many other localities. The largest number of individuals were observed during the fall migration, October 9, 1924.

WILSON'S PHALAROPE. *Steganopus tricolor.* Occasional migrant and summer resident.

AVOCET. *Recurvirostra americana.* Two records; May 11, 1924 and June 21, 1924, both from Loveland.

WILSON'S SNIPE. *Gallinago delicata.* A common migrant. Earliest spring record, May 4, 1924. Latest fall record, November 26, 1925.

MARBLED GODWIT. *Limosa fedoa.* One record, May 10, 1924. Sclater, (1912), lists this species as a rare migrant.

YELLOWLEGS. *Totanus flavipes.* One record, May 10, 1924.

WESTERN WILLET. *Catoptrophorus semipalmatus inornatus.* Fairly common. Earliest record, May 10, 1924.

SPOTTED SANDPIPER. *Actitis macularia.* A common summer resident along the South Platte and its tributaries.

LONG-BILLED CURLEW. *Numenius americanus.* One record, May 9, 1925.

KILLDEER. *Oxyechus vociferus.* A very common summer resident in the South Platte valley. Without doubt the most common representative of the shore bird group.

BOB-WHITE. *Colinus virginianus virginianus.* Found occasionally in the South Platte bottoms. A few individuals were seen near Greeley from time to time. Cooke, (1900), states that this species was introduced at Grand Junction in 1891 and that it was a native species at Wray on the eastern border of the State. It seems that this species has been extending its range westward.

INTRODUCED PHEASANT. Supposedly a hybrid stock of *Phasianus colchicus* and *Phasianus torquatus.* The most common gallinaceous bird in the plains region.

BAND-TAILED PIGEON. *Columba fasciata fasciata.* One record of four individuals, May 2, 1925.

WESTERN MOURNING DOVE. *Zenaidura macroura marginella.* A very common summer resident. Nests in the trees about towns for the most part. The young are hatched about the end of June. The first spring appearance recorded was on April 10, 1925.

TURKEY VULTURE. *Cathartes aura septentrionalis.* One record of seven birds from Fort Morgan, June 8, 1924.

MARSH HAWK. *Circus hudsonius.* The most common summer resident of the hawk group with the possible exception of the Sparrow Hawk. Practically a resident species; the earliest record being January 15, 1924, and the latest December 12, 1924.

SHARP-SHINNED HAWK. *Accipiter velox.* One record, May 11, 1925.

COOPER'S HAWK. *Accipiter cooperi.* One record, May 2, 1925.

KRIDER'S HAWK. *Buteo borealis krideri.* One record, December 8, 1924.

WESTERN RED-TAIL. *Buteo borealis calurus.* Fairly common. Records range from April 22, 1924 to December 12, 1925.

PRAIRIE FALCON. *Falco mexicanus.* One record, October 4, 1924.

SPARROW HAWK. *Cerchneis sparveria.* A common summer resident. Earliest spring record, March 21, 1925, at Longmont.

LONG-EARED OWL. *Asio wilsonianus.* Two records; December 12, 1924, at Kersey, and April 22, 1925, at Greeley.

BURROWING OWL. *Speotyto cunicularia hypogaea.* Very common summer resident wherever there are prairie dog towns.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus.* Cooke, (1900), does not mention this species. Sclater, (1912), terms it a rare summer visitor. It was observed nesting at Greeley in 1924 and 1925. This is another species that appears to be extending its range westward.

BELTED KINGFISHER. *Ceryle alcyon.* A common summer resident. Earliest record, January 15, 1924.

RED-HEADED WOODPECKER. *Melanerpes erythrocephalus.* An abundant summer resident, particularly in the towns. It arrives rather late, the earliest record being March 16, at Loveland.

LEWIS'S WOODPECKER. *Asyndesmus lewisi.* Ordinarily an inhabitant of the mountain forests this species was observed occasionally on the plains adjacent to the foothills during the coldest weather.

RED-SHAFTED FLICKER. *Colaptes cafer collaris.* A common bird in or about towns during most of the year. Earliest record, January 30, 1924.

POOR-WILL. *Phalaenoptilus nuttalli nuttalli.* One bird recorded on May 28, 1924. It was captured alive, having flown into a house. Its captors pronounced it an "owl".

WESTERN NIGHTHAWK. *Chordeiles virginianus henryi.* A common summer resident. Earliest record, May 28, 1924.

KINGBIRD. *Tyrannus tyrannus.* A common summer resident, more common toward the eastern border of the State.

ARKANSAS KINGBIRD. *Tyrannus verticalis.* Also a common summer resident. More common than *T. tyrannus* as far west as Greeley but less common than *T. tyrannus* northeast of Fort Morgan.

CASSIN'S KINGBIRD. *Tyrannus vociferans.* Occasional summer resident.

SAY'S PHOEBE. *Sayornis sayus.* Common summer resident. Earliest record, April 10, 1925.

HAMMOND'S FLYCATCHER. *Empidonax hammondi.* One record, May 14, 1924.

DESERT HORNED LARK. *Otocoris alpestris leucolaema.* An abundant resident.

MAGPIE. *Pica pica hudsonia.* An abundant resident.

BLUE JAY. *Cyanocitta cristata.* Apparently this species is extending its range westward in a rather marked fashion. Cooke, (1900), does not record its presence. Sclater, (1912), states that: "The Blue Jay has only recently been recorded from Colorado." One pair nested at Greeley in the summer of 1924 and two pairs were observed nesting in the summer of 1925.

LONG-CRESTED JAY. *Cyanocitta stelleri diadematа.* This species is seen commonly in the plains region during the cold weather when it is driven down from the higher levels.

WESTERN CROW. *Corvus brachyrhynchos hesperis.* Common in the northeastern region and as far south as Denver. According to Sclater it is rare in other parts of the State. Possibly this species is also extending its geographical range to the southwest.

PINON JAY. *Cyanocephalus cyanocephalus.* One record, April 17, 1925.

COWBIRD. *Molothrus ater ater.* Two records; April 17, 1925 and April 25, 1925.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus.* An abundant summer resident in the South Platte and Cache la Poudre valleys. Earliest record, May 3, 1925.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus.* Another abundant summer resident. Earliest record, January 15, 1924. Common on January 20 of that year. These records, however, are not typical; ordinarily this species is not well represented until the first week in April.

WESTERN MEADOWLARK. *Sturnella neglecta.* An abundant summer resident. Earliest record, April 1, 1924.

BULLOCK'S ORIOLE. *Icterus bullocki.* A common summer resident, arriving about the first of June.

Brewer's Blackbird. *Euphagus cyanocephalus.* A common summer resident. First record, April 17, 1925.

Bronzed Grackle. *Quiscalus quiscula aeneus.* Appeared periodically in large flocks. Also seems to be extending its range westward.

House Finch. *Carpodacus mexicanus frontalis.* An abundant summer resident in the vicinity of towns.

Arkansas Goldfinch. *Astragalinus psaltria psaltria.* Two records; May 12, 1924 and May 17, 1924.

Pine Siskin. *Spinus pinus.* One record, May 11, 1925.

House Sparrow. *Passer domesticus.* Common at all times. It was noted that this species flocked to the fields and vacant lots to eat grasshoppers when they made their first appearance in numbers.

Western Vesper-Sparrow. *Pooecetes gramineus confinis.* One record, May 12, 1925.

Western Savannah Sparrow. *Passerculus sandwichensis alaudinus.* One record, May 4, 1924.

Western Grasshopper Sparrow. *Ammodramus savannarum bimaculatus.* One record, May 12, 1925.

Western Lark Sparrow. *Chondestes grammacus strigatus.* One record, April 10, 1925.

White-crowned Sparrow, *Zonotrichia leucophrys leucophrys,* and Gambel's Sparrow, *Zonotrichia leucophrys gambeli.* Common in the migration season. The White-crowned Sparrow is a summer resident.

Western Chipping Sparrow. *Spizella passerina arizonae.* One record, April 10, 1925.

Clay-colored Sparrow. *Spizella pallida.* One record, May 11, 1925.

Gray-headed Junco. *Junco phaeonotus caniceps.* Two records; April 1, 1924 and April 6, 1924.

Green-tailed Towhee. *Oberholseria chlorura.* One record, July 11, 1925, from Fort Collins. This species was common at higher altitudes along the Eastern Slope.

Black-headed Grosbeak. *Hedymeles melanocephalus.* A common summer resident in and about towns. First arrival noted on May 12, 1924.

Lazuli Bunting. *Passerina amoena.* Common summer resident. Appeared in numbers about the middle of June.

LARK BUNTING. *Calamospiza melanocorys.* An abundant summer resident east of Fort Morgan. Abundant at Julesburg. Less common at Greeley. A few records from the foothills region between Loveland and Fort Collins.

CLIFF SWALLOW. *Petrochelidon lunifrons lunifrons.* A summer resident in 1924 and 1925.

BANK SWALLOW. *Riparia riparia.* Although supposedly rare in Colorado this species was observed nesting near Greeley in 1924 and 1925. A colony was located in a sandy bank not far from the Cache la Poudre River. The colony contained about twenty adult birds.

RED-EYED VIREO. *Vireosylva olivacea.* One record, June 8, 1925, near Fort Collins.

YELLOW WARBLER. *Dendroica aestiva.* An abundant summer resident. The first arrivals were noted on May 12, 1924 and May 13, 1925. Young birds were able to fly on July 13, 1924.

AUDUBON'S WARBLER. *Dendroica auduboni auduboni.* Common during the migration season. First spring arrivals noted on May 13, 1925.

REDSTART. *Setophaga ruticilla.* One record, May 12, 1924.

DIPPER. *Cinclus mexicanus unicolor.* Typically a bird of the mountain streams, this species was recorded from the foothills region near Loveland on February 15, 1924.

WESTERN MOCKINGBIRD. *Mimus polyglottos leucopterus.* A regular but not common summer resident. Recorded on May 12, 1924 and June 30, 1925.

CATBIRD. *Dumetella carolinensis.* A fairly common summer resident in the neighborhood of towns.

BROWN THRASHER. *Toxostoma rufum.* One record, May 28, 1925.

WESTERN HOUSE WREN. *Troglodytes aedon parkmani.* One record, May 28, 1925.

RED-BREASTED NUTHATCH. *Sitta canadensis.* One individual of this species was attracted to a piece of suet placed on a window sill on several occasions during January and February, 1924.

LONG-TAILED CHICKADEE. *Penthestes atricapillus septentrionalis.* Three records; January 15, 1924, April 1, 1924, and May 28, 1925.

RUBY-CROWNED KINGLET. *Regulus calendula calendula.* One record, February 15, 1924.

OLIVE-BACKED THRUSH. *Hylocichla ustulata swainsoni.* A common migrant. First spring record on May 12, 1924.

Western Robin. *Planesticus migratorius propinquus.* An abundant summer resident. First spring record on February 15, 1924.

Mountain Bluebird. *Sialia currucoides.* Common as a migrant. First arrival noted on March 4, 1925, near Loveland.

Summary

The chief inference drawn from two years of study of the birds in this region was that certain species are tending to extend their ranges into Colorado from the northeast. After all, this is not at all surprising, in fact it is just what might be expected under the existing circumstances. A new region has been opened to agricultural pursuits, insects that feed upon the crops have become abundant, and the birds which feed upon the insects extend their ranges as an adjustment in the economy of nature.

Perhaps we should expect a more marked movement than has actually materialized. However, there are at least two factors that would tend to hinder or delay such an extension of geographical ranges. The region has its own native fauna which would offer strong competition for any new species. For instance, the House Finch seems to have no difficulty in holding its own in competition with the House Sparrow. Then too, the irrigated and cultivated region consists of a belt of land lying along the foothills. Aside from the South Platte Valley which extends into Colorado diagonally from the northeast, the eastern plains are comparatively barren and treeless. Hence there would be little incentive for a westward movement of birds except along the Platte River.

The species which seem to have become more common in northeastern Colorado in recent years are the Bob-white, the Yellow-billed Cuckoo, the Blue Jay, and the Bronzed Grackle. To this list might be added the Kingbird, the Western Crow, and the Bank Swallow.

Just how important such a movement, if it really exists, may prove to be is a question that cannot be answered at the present time. It would seem possible, however, that the movement might become more marked as more land in northeastern Colorado is opened to cultivation.

Coe College.

Cedar Rapids, Iowa.

THE WILSON BULLETIN

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EDITORIAL

THE ANNUAL MEETING for 1930 of the W. O. C. will be held at Cleveland, Ohio, in conjunction with the meeting of the American Association for the Advancement of Science, and the dates have been fixed for Monday and Tuesday, December 29 and 30. It is not too early now to begin to plan a paper for this meeting.

THE COLORED PLATE in this issue again appears through the courtesy of the Nebraska Ornithologists' Union. Through it we are pleased to introduce a new artist and a new engraver; Miss Iva B. Swenk is the artist, and the Bureau of Engraving, Minneapolis, is the engraver. Professor Swenk's paper on the crown sparrows, in this issue, is a fitting supplement to the Harris's Sparrow article of last year.

DURING the present year our Secretary has been making a sustained effort to increase the net total of our membership to a point where we can continue regularly the increased size of the BULLETIN. From the beginning of the year to June 1 he has received 136 new member applications. This is an excellent showing and we all trust that he may more than double that number during the remainder of the year. Each member may be of very great assistance by sending additional nominations to the Secretary, who will then extend invitations.

WORD has been officially sent out that one lone Heath Hen, the last of its race probably, still survives on Martha's Vineyard Island. When the annual Heath Hen census was made March 28 to April 4, 1930, only one male bird was counted, presumably the same one noted in the census one year ago and from time to time since.

For several years we have been keeping a record of such complete sets of the Wilson Bulletin as we have learned about incidentally. Only eighteen sets have thus come to our attention, and these are, for the most part, of the "new series". So far as our information goes the only complete set of the "old series" is in the possession of Dr. Jones. Not all of the sets listed below are complete with originals—a number of them contain the reprints; Dr. Jones' set has the originals, but we can not say how many others. We will be glad to learn of other sets, and will print the list again if it is materially increased.

1. Dr. Guy C. Rich, Hollywood, Calif.
2. Dr. J. Grinnell, Berkeley, Calif.
3. Dr. Walton I. Mitchell, Berkeley, Calif.
4. Prof. Tracy I. Storer, Davis, Calif. Nearly complete.
5. Prof. Junius Henderson, Boulder, Colo.
6. T. C. Stephens, Sioux City, Iowa.
7. Prof. A. W. Schorger, Madison, Wisc.
8. University of Wisconsin Library, Madison, Wisc.
9. R. M. Barnes, Lacon, Ill.
10. Clarence Bretsch, Gary, Ind. Nearly complete.
11. Prof. Lynds Jones, Oberlin, Ohio.
12. Oberlin College Library, Oberlin, Ohio.
13. Maunsell S. Crosby, Rhinebeck, N. Y.
14. Bradshaw H. Swales. Deceased.
15. Dr. H. C. Oberholser, Washington, D. C.
16. Smithsonian Institution, Washington, D. C.
17. U. S. National Museum, Washington, D. C.
18. Royal Hungarian Institute of Ornithology, Budapest, Hungary.

The Seventh International Ornithological Congress was announced to take place during the first week of June at Amsterdam, Holland. This Congress was held at five-year intervals until interrupted by the war. The Third Congress was held in Paris in 1900, next in London in 1905, and then in Berlin in 1910. The meetings were resumed in 1926 with the Sixth Congress in Copenhagen.

In the original copy of his paper on the Crown Sparrows, in this issue of the Bulletin, Professor Swenk cited the specific name of the Gambel's Sparrow as *gambelii*, in conformity with Opinion 8 of the International Zoological Commission, but departing from the spelling given in the third edition of the A. O. U. Check List. The Editor, not being an expert on nomenclature, relies entirely upon the latter for the spelling of scientific names; this is done in the interest of uniformity. Hence an endeavor is made to bring papers into conformity with the A. O. U. Check-List—even when the International Code may be to the contrary. We will just as conscientiously follow the forthcoming check-list, even in a reversal of previous usage.

GENERAL NOTES

Conducted by M. H. Swenk

The Red-shafted Flicker in Tulsa County, Oklahoma.—Although the Red-shafted Flicker (*Colaptes cafer collaris*) was reported by Miss Edith R. Force as occasional at Tulsa, Oklahoma, and vicinity (The Birds of Tulsa County: Proc. Okla. Acad. Sci., ix, p. 69, 1929), the first specimen known to be collected in this locality was taken eight miles southwest of Tulsa on January 20, 1930. The specimen is now in our personal collection.—Mr. and Mrs. A. E. Gilmore, *Tulsa, Okla.*

Early Robins on Long Island.—Three Robins (*Planesticus migratorius migratorius*) were seen at Brightwaters, Long Island, New York, on February 12, 1930. The record for Long Island, as given in Griscom's Birds of the New York City Region (1923), is February 23. However, Raymond H. Torrey of the New York Evening Post, reports Robins at Alley Pond, near Douglaston, on February 8, 1930.—Warren J. Willis, *Bellerose, L. I., N. Y.*

The Olive-sided Flycatcher in Iowa.—During the latter part of August, 1928, T. C. Stephens, Stubert Stephens, and the writer made a tour of the Iowa State Parks. The purpose was to see our parks and to make observations of bird life.

The presence of migrating Olive-sided Flycatchers (*Nuttallornis borealis borealis*) was noteworthy. The first bird was listed near Rice Lake in Worth County on August 24; then at the following places: August 25 at Fort Atkinson in Winneshiek County; August 27 at Backbone State Park in Delaware County; August 28 near Mt. Vernon in Linn County, and at Iowa City in Johnson County; August 29 near Mt. Pleasant in Henry County. August 30 at Keosauqua State Park in Van Buren County; August 31 near Indianola in Warren County and near Winterset in Madison County; and September 1 at Devils Backbone State Park in Madison County.—William Youngworth, *Sioux City, Iowa.*

Concerning a Young Snowy Egret in Maryland.—In going over a flock of white herons at Chesapeake Beach, Maryland, September 6, 1929, the writer detected one individual which up to the present time has not been definitely identified. A group of three birds were under observation for at least fifteen minutes, at a distance of perhaps fifty feet, 8x binoculars being used. Two of these individuals were without question first year Little Blue Herons (*Florida caerulea*), the bill with its varying shades of blue, greenish lores, the slate-blue tipped primaries, and the greenish-yellow legs and feet being very readily seen. The third member of this group had a pure black bill, yellow lores, but the legs were the same color as that of the other birds, and when they jumped up, this one had no markings on its primary tips, being pure white. The sun was directly overhead, and as the day was cloudless, light conditions were excellent.

I believe that this third bird was the Snowy Egret (*Egretta candidissima candidissima*) and a bird of the year. Forbush (Birds of Massachusetts, i, p. 330, 1925) has this to say: "legs and feet at first olive (Audubon); young in October have legs yellowish-green marked black and toes greenish-yellow." This is the only statement that I can locate that tallies with the bird I saw. I wish that some one with a definite knowledge on this point would settle the question for me.—William Howard Ball, *Washingon, D. C.*

Crossbills in Michigan.—When winter storms sweep the North and the ground is covered deep with snow, as one wanders through field and wood only a few bird species are present. Such was Janunary 28, 1923, as, warmly dressed, I had waded through the snow to a little tamarack swamp near Battle Creek. There had been very few birds observed, but voices came to me from the marsh indicating that here the birds had selected a winter feeding place. It had been here, on a cold snowy day two weeks previous, that both a Bluebird and a Robin had been noted, joined in search for food with the Chickadees, Nuthatches, Downy and Hairy Woodpeckers, Brown Creeper, Tree Sparrows, and Juncos. Also the Pine Siskin, a covey of Quail and one Ruffed Grouse.

These birds were again there except that nothing could be found of either the Bluebird or Robin. Two Cardinals had joined the flock, also a Song Sparrow near the grassy edge of the marsh and some Blue Jays. But most of all, seven birds in a larch tree attracted my attention. They were eating seeds apparently from small cones. They were Red Crossbills (*Loxia curvirostra minor*). Their whistling calls and noisy rustling of cones while feeding readily located them.

But these birds were only part of the flock, several others being observed, while nearer to the ground, eating seeds, was another crossbill, a lighter colored bird with two distinct white wing bars and a black tail. This was a White-winged Crossbill (*Loxia leucoptera*), and proved quite unafraid, allowing me to approach within five or six feet before flying. When, the next week ,on February 4, I returned, there were four of this species observed and none of the Red Crossbills. Since then neither of the species has ever been observed. Each winter the little tamarack swamp is searched, but each year brings the same result—no crossbills.—Lawrence H. Walkinshaw, *Battle Creek, Mich.*

A Phoebe Nest in an Abandoned House.—While passing by an abandoned farm two miles west of Burton, Ohio, on June 5, 1927, a pair of the Phoebe (*Sayornis phoebe*) were noticed flying in and out of a two by three inch opening in a broken window pane of the kitchen. The opening was closed, and on entering the house the nest was found on a wooden mantel about five feet above the floor. Alarmed by the warning cries of the parent birds, the five young left the nest, flying to the entrance window, where one of them, together with the adult birds, succeeded in escaping. The remaining four were marked with bands numbered 193548, 193549, 193550, and 193551.

Scattered on the floors of the farm buildings were many poultry feathers, similar to those which had apparently been used in the construction of the nest, but due to the interval of several years since the farm had been abandoned, all parasites must have disappeared from the feathers, as no parasites were to be found either on the young or in the nest.

If it is true that the male usually selects the territory or general location of the nesting site while the female does the greater part of the nest building, then in this instance the male bird showed a successful pioneering spirit in selecting this location, but the female was more conservative and built the customary moss covered nest, though the green color of the moss contrasted sharply with the yellow painted mantel and cream colored wall paper.—E. C. Hoffman, *Lakewood, Ohio.*

The Lark Sparrow Nesting in Schuyler County, Illinois.—While studying the nesting habits of birds during the past summer (1929), a nest of the Lark Sparrow (*Chondestes grammacus grammacus*) was brought to my attention. This nest was located on June 20, by Earl Ward, a farmer, who lives four miles southwest of Pleasant View, Illinois. The nest was found in a corn field, about 150 yards from the barn and 100 yards from an adjoining clover field. It was placed in a small depression at the base of a hill of corn, and was protected from view by a smartweed. One could approach to within six or eight feet of the nest and the old bird would sit perfectly quiet. A visit to the nest on July 15 revealed that it had been abandoned. At this time the smartweed was cut aside and a photograph made. There are comparatively few birds that nest in the corn field, and perhaps this is not a common nesting site for the Lark Sparrow.—R. O. Malcomson, *Sioux City, Iowa.*

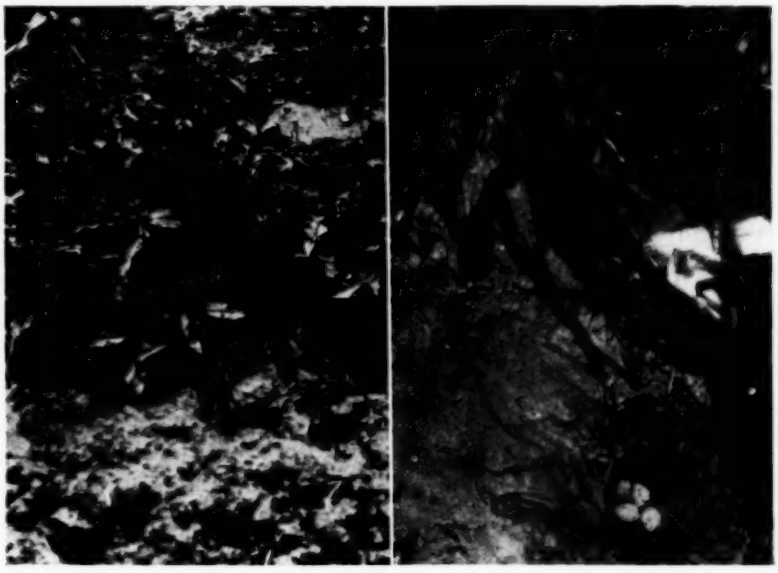

Fig. 9. Nest of the Lark Sparrow in a corn field, concealed (left), and exposed (right).

The Fall Migration at Cleveland's Public Square.—The Public Square in Cleveland consists of four sections with small patches of grass containing a few shrubs, small plane trees and flower beds, hemmed in by busy streets and tall buildings. Each of the sections is crossed by sidewalks which bear a heavy pedestrian traffic.

The normal bird life of the Square consists of a large flock of pigeons. As an adjunct to this flock there are many English Sparrows, which live upon the leavings from the pigeons' table. In recent years the Starlings have come to use the Square as a roosting place in winter, but are usually lacking during the day and all summer.

All this does not seem to portray a place which would be attractive to native wild birds, even as a stopping place in migrations, but between September 6 and December 5, 1929, a period of just three months, I was fortunate enough to identify twenty-one species, as follows:

Species	First Record	Last Record	No. of Days Seen	Largest No. in One Day
Herring Gull	Nov. 8		1	1
Sparrow Hawk	Sept. 7	Nov. 7	6	2
Least Flycatcher	Sept. 7		1	1
White-crowned Sparrow	Oct. 2	Oct. 16	11	4
White-throated Sparrow	Sept. 16	Nov. 25	52	23
Tree Sparrow	Nov. 6	Nov. 20	10	1
Slate-colored Junco	Oct. 4		1	1
Song Sparrow	Sept. 30	Dec. 5	36	2
Lincoln Sparrow	Sept. 18	Oct. 8	15	3
Swamp Sparrow	Oct. 1	Nov. 15	28	2
Tennessee Warbler	Oct. 2		1	1
Black-throated Blue Warbler	Oct. 8		1	1
Blackpoll Warbler	Sept. 30	Oct. 4	4	2
Palm Warbler	Sept. 10	Sept. 11	2	1
Northern Yellowthroat	Sept. 6	Oct. 3	15	3
Catbird	Oct. 2	Oct. 7	4	1
Winter Wren	Nov. 7	Nov. 14	7	1
Golden-crowned Kinglet	Oct. 14	Oct. 25	3	3
Ruby-crowned Kinglet	Oct. 2	Oct. 15	5	1
Olive-backed Thrush	Oct. 2		1	1
Hermit Thrush	Oct. 7		1	1

At least one visit was made every day in this period, with the exception of Sundays, of which there were thirteen, and three other days. There were only seven days on which no uncommon birds were found and six of these were in the last week, following cold weather and a heavy snow storm.

One of the most interesting features observed was the change in temperament which occurred in a number of species soon after their arrival. The most outstanding example of this change was the Winter Wren, apparently one of the most timid birds once its curiosity is satisfied, which fed in the grass not two feet from a dozen watchers, and allowed a man to reach down and pick it up. When the bird was replaced on the ground it hopped a few feet away and resumed its feeding, although it was careful not to allow a repetition of the incident. Others, especially the White-throated Sparrows and Swamp Sparrows, soon became quite fearless and not only held their own against the English Sparrows, which bullied them at first, but finally became the undisputed masters of their particular grass plots or shrubs. This attribute of fearlessness made the birds much easier to study, particularly in the case of the more obscurely marked species, such as the Lincoln's Sparrows and Blackpoll Warblers, both of which permitted approach within three or four feet without more than a casual interest in the observer. All of the birds seemed to have full use of their faculties and apparently were not injured or disabled in any way.

Of the twenty-one species observed, two may be expected to appear at intervals throughout the winter, the Sparrow Hawk, which winters about the cornices of office buildings in the downtown section of the city, and the Herring Gull, which frequently flies low over the Square on foraging trips along the nearby Guyahoga River, and from Lake Erie which is about a half mile north of the Square. The other nineteen species evidently occurred strictly as migrants. The

largest number of species seen in one day occurred on October 2, a cold, cloudy day with a gale blowing in from the lake, when eleven species, totalling thirty-two or more individuals, were found. The close proximity of the Lake is the probable answer to the question of such unexpected luck at bird study in this place. In the spring migration, when so many birds were not seen, they probably start their flight across the Lake from a point inland from the city, and pass over the Square while they are still fresh and strong. The sparrows and other granivorous species should be able to find plenty of crumbs and scraps of food, but it is a question just how much food is available to insectivorous birds in this grimy, noisy spot, where only oriental plane trees and willows have been able to survive the smoke and other impurities of the air.—WILLIAM H. WATTERSON, *Cleveland, Ohio.*

Intimate Nestings of the Brown Thrasher.—While myself and family were living on a farm near Thornburg, Iowa, some years ago, we had a thriving rose bush standing directly in front of the kitchen window and close up; so close in fact that some of the foliage and roses touched the glass. One season the Brown Thrashers (*Toxostoma rufum*) made their home in this rose bush. Their nest was twenty inches from the window glass. Just inside the window stood a sofa upon which our little girl, about three years old, was playing and frolicking around a good share of the time. This did not disturb the birds in the least. And what glorious floods of melody, chanting, and advice the male bird used to give us from the top of a tree near by!

But, alas, during the time the birds were incubating a fearful wind and rain storm came and whipped the rose bush about so badly that the nest was blown out and the broken eggs scattered over the ground. Their next and successful attempt was in an Osage hedge fence forty feet from the front door.

More recently a pair of Brown Thrashers made their nest in some grape vines on top of the garden fence near our residence in the city. A public alley, frequented by autos and other vehicles as well as by pedestrians and dogs, passed one side of this fence. Near the other side was a private walk over which members of the family passed many times each day. Yet the birds successfully raised a brood of three young at this place.—E. D. NAUMAN, *Sigourney, Iowa.*

Canada Geese Review a Parade of Ducks.—Mrs. M. A. Hall has recently described to me the following interesting observation: "On January 26, 1929, I witnessed from my hunting blind a very remarkable performance, participated in by Canada Geese and several species of wild ducks. My blind is on the point at the east side of John's cove, on the Gulf of Mexico shore about a mile east of Wakulla Beach, Florida.

"It had been foggy all forenoon and I was waiting in the blind for the geese to come in to the marshes on the tide. About 3 P. M. the fog lifted and I saw directly opposite me across the little channel a single file of between 250 and 300 Canada Geese. These geese were all facing my way, heads up and not feeding. In a few minutes ducks began to come in on the tide between me and the geese. They were not feeding, merely swimming and drifting. There were several species of ducks—some 300 Mallards and Black Ducks, also Redheads, Canvasbacks, Baldpates, Blue-winged Teal, Scaups, and Mergansers. Besides these there were about a dozen ducks that I took to be Old Squaws.

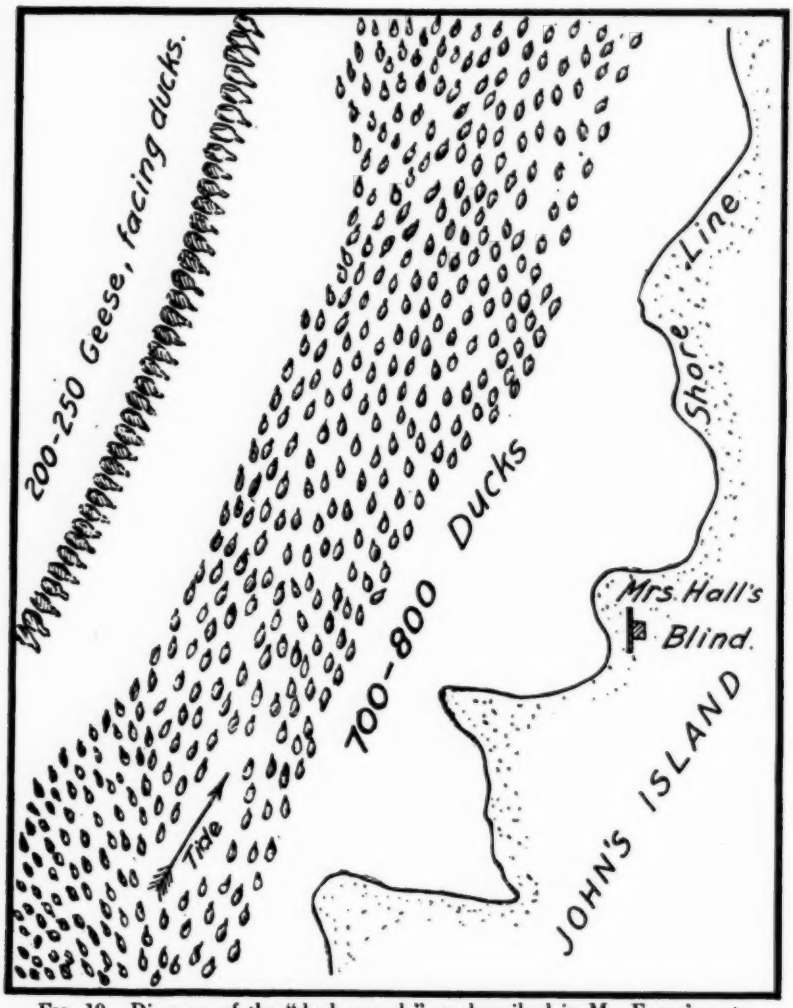

FIG. 10. Diagram of the "duck parade" as described in Mr. Fargo's note.

"Other ducks of these species would from time to time fly in from the Gulf and join the flock, until there were from 700 to 800 ducks assembled. No other ducks were in sight anywhere. The assembled flock of ducks continued to drift or swim along with the tide and none were feeding although this is their favorite feeding place. The ducks were in a great mass formation, the geese in a close single rank, heads up facing the ducks.

"For a time the geese passed slowly along on the tide, but when the ducks had all passed by the geese turned about and swam upstream. The parade was over. The ducks went to feeding.

"I have watched and hunted wildfowl here for many years, but never before have I seen any performance like this one. Was it accidental or had it some significance?"—WILLIAM G. FARGO, *Jackson, Mich.*

ORNITHOLOGICAL LITERATURE

BIRDS OF MASSACHUSETTS AND OTHER NEW ENGLAND STATES. Part III. Land Birds from Sparrows to Thrushes. By Edward Howe Forbush. Issued by authority of the [Massachusetts] Legislature, 1929, and distributed by the Secretary of the Commonwealth (Room 118, State House, Boston). Pp. i-xlviii+1-466. Col. pls. 63-93 (30). Figs. 68-97. Distribution maps, 17, text figs. 23, and a portrait of Mr. Forbush as a frontispiece. Price, $5.00.

This volume forms the third and concluding one of the series. The preceding volumes were reviewed in the WILSON BULLETIN for March, 1926 (XXXVIII, pp. 60-61) and for June, 1928 (XL, pp. 118-119). Before the last volume was published the author passed away, so that the entire work now fittingly becomes a monument to the life work and memory of Mr. Forbush, not alone in his native state, but in the scientific world in general.

The present volume contains a biography of Mr. Forbush by Dr. John B. May, upon whom also rested the general editorial responsibility for the entire volume. Volume III treats of all of the sparrows and of all of the families on to the end of the present A. O. U. Check-List. The text follows the same plan of the preceding volumes, and we need not repeat the comments made in our earlier reviews of this work. The third volume contains the indexes for the three volumes.

The three volumes contain ninety-three colored plates, thirty of which are in the present volume. Of the latter seven are by Fuertes, the remainder are by Brooks. This series of plates alone will make the work useful to students beyond the territory covered by the text.

No ornithological work since Coues' Key impresses us as being so generally useful to the increasing group of amateur ornithologists as this one by Forbush, taking into consideration description, illustration, and cost. It is a magnificent piece of work, for which the State of Massachusetts may be proud, and the rest of us grateful.—T. C. S.

BIRD SONG. By Aretas A. Saunders. New York State Museum Handbook No. 7, Albany, N. Y., 1929. Pp. 1-202. Price, 75 cents.

This booklet is issued as one of the "handbooks" of the New York State Museum. It may be considered monographic in the range of the treatment of the subject of bird song, though it may not be so complete in reference to the literature and in the bibliography. The appended bibliography is a very useful one, nevertheless. It would be superfluous to attempt in a review to outline the subject matter; for a glance at the table of contents suggests that almost any topic concerning bird song is discussed. The author has given considerable study to the various methods of representing bird song graphically, and the pages on this subject will doubtless be of interest to many. We judge this booklet to be among the most readable and interesting ornithological papers which have recently appeared, being devoid of technicality, yet comprehensive and scientific.—T. C. S.

THE BOOK OF BIRD LIFE. By Arthur A. Allen. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York, 1930. Pp. i-xxii+1-426. Figs. 1-275, and colored frontispiece. Price, $3.50.

So far as we know Dr. Allen holds the only college or university chair of ornithology in the country. The present volume is another evidence of his industry and achievement in this special field of biology. Perhaps the noteworthy feature of this book is the very large number of original photographic illustrations, in the making of which Dr. Allen is a past master. We marvel not so much at the technical skill, but at the patience and time necessary to secure the results. The book is divided into twenty chapters some of which cover the subjects of ancestry, classification, distribution, ecological communities, migration, courtship, home-life, adaptations, coloration and molt, economic value, and various methods of bird study, including study of nests, bird photography, bird banding, care of wild bird pets, etc., etc. It is to be seen that a wide field is covered. At the close of each chapter there is a short list of germane reading references. The text may be summarized as a simple and reliable presentation of the broader biological aspects of ornithology, and it will serve as an excellent introduction to the subject. The publishers have not made the book so attractive externally as might have been expected, but it is substantially bound and appears to be durable.—T. C. S.

THE NATURAL HISTORY OF THE DOUBLE-CRESTED CORMORANT (PHALACROCORAX AURITUS AURITUS (LESSON)). By Harrison Flint Lewis. Ottawa, Canada (H. C. Miller, 175 Nepean St.), 1929. Pp. 1-94. Figures 14, including 10 halftones, 2 drawings, and 2 maps. Price, 75 cents.

Monographic papers, such as the one here mentioned, are always of the greatest interest and value. What a millenium it will be when we can have so complete a treatment of every species among North American birds! Seasonal range and migration are fully treated. All known breeding colonies of this subspecies are listed, totalling 94 colonies, with a breeding population of 21,476 birds. The author estimates that there must be enough unknown colonies to bring the total up to 115, with a total population of about 40,000. The surprising thing about these figures is that they are so small. Certainly, the future will have to balance this species very nicely in order to avert disaster.

Many new observations on courtship and mating are presented, and the author believes that the male takes the lead in this matter, as well as in the selection of the nest-site. The birds do not develop full crests until the fourth year. At the close of the paper the author enumerates various lines of needed research which will be of interest to those in position to pursue a study of this species. A very full bibliography is appended, and good bibliographies always represent labor and are correspondingly useful. One may find it difficult to keep up with all the current publications in the field of ornithology, but this paper should not be overlooked by the earnest student of birds.—T. C. S.

THE EUROPEAN STARLING ON HIS WESTWARD WAY. By Marcia Brownell Bready. The Knickerbocker Press, New York, 1929. Pp. i-xxvi+1-141. 1 colored plate. Price, $2.

Part I is devoted to the economic value; Part II, to the song; Part III, to systematic relations and natural history. It is clear that Mrs. Bready has risen to the defense of the Starling. In dealing with the question of economic value the author has selected some of the many current facts to the advantage of this species. She very effectively plays the role of defense attorney. After presenting many facts and figures to prove the beneficial status of the Starling as an insect destroyer, the author brings in the testimony of entomologists to the effect that insect collecting has not been noticeably spoiled by the Starling's predaceous work, and thus scores twice for the bird.

The real contribution of this book probably lies in the three or four chapters on the Starling's song. Besides showing the simple beauty of the Starling's song the author carries out a philosophical analysis of this song to follow which fully requires some knowledge of harmony and counterpoint. The melodies recorded by the author as having been sung by the Starling at Bay Ridge show the use of every tone of the diatonic major scale, and the major chord and its relative minor. When one reads the melody which uses the C major triad followed by its dominant minor (G minor) triad, or the melody using all the tones of a diminished seventh chord, one is indeed tempted to acknowledge that the Starling's musical fundamentals are not much inferior to the present day music of man. Mrs. Bready's suggestion of a parallelism between the development of the Starling's song and that of human music seems therefore worthy of consideration. The reviewer is under obligation to Professor James Reistrup for collaboration in estimating the musical discussion in this work.—T. C. S.

THE SUMMER BIRDS OF THE NORTHERN ADIRONDACK MOUNTAINS. By Aretas A. Saunders. Roosevelt Wild Life Bulletin, Vol 5, No. 3, 1929. Pp. 323-499, Colored pls. 1-2, Figs. 93-160, Contour maps 7-8. Price, $1.

This Bulletin is a convenient guide for the study of birds in the Adirondack Mountains. Some geographic and ecologic discussion precedes the catalogue of birds. Each species is discussed under the headings, description, identification, voice, occurrence, habitat. Ten pages are devoted to the relations between the birds and the forests. Finally, there is reprinted the list of summer birds of the Adirondacks originally published in 1877 by Theodore Roosevelt and H. D. Minot, including 97 species. Saunders' present list includes 121 species.—T. C. S.

BIRDS OF A LIMITED AREA IN EASTERN KANSAS. By Jean M. Linsdale. Reprinted from Univ. Kansas Sci. Bull., XVIII, No. 11, April, 1928. Pp. 517-626.

Dr. Linsdale spent 200 days in field work (during 1921-1925) in a limited area along the Missouri River in Kansas. On the basis of this work a number of papers have been published. Two papers on the ecology have appeared respectively in the WILSON BULLETIN and the *University of Kansas Science Bulletin*. The paper here noticed is an annotated list of the birds found.—T. C. S.

Relations Between Plants and Birds in the Missouri River Region. By Jean Linsdale. Reprinted from the Univ. Kansas Sci. Bull., XVIII, No. 10, April, 1928. Pp. 499-515.

This paper presents a list of the more important trees and shrubs in the lower Missouri Valley, with a discussion of the relations of bird life to them, especially touching on their use for suitable nesting sites, food, shelter, and nest materials. The text indicates keen and careful observation, and presents a most interesting collection of commonplace facts which are usually taken for granted by writers. Apparently, the author has given most attention to the location of nests; we would have welcomed a similar close account of the food relations.—T. C. S.

Some Birds of Maryland. By T. Gilbert Pearson. Published by the Conservation Department of the State of Maryland. Pp. 1-70, 32 colored plates. 1929.

Another attractive state brochure on the common birds, well written and beautifully illustrated. Thirty-two species are given each one page of discussion. Each species is illustrated by a colored plate—eighteen by Horsfall, six by Brooks, six by Sawyer, and two by Fuertes. The coloring of one or two of the plates is open to criticism—the one of the Barn Swallow seems to be especially faulty. While no price is stated, interested persons may probably secure a copy, so long as the supply lasts, by addressing Hon. E. Lee LeCompte, State Game Warden, 512 Munsey Bldg., Baltimore, Md.—T. C. S.

The Ring-necked Pheasant—its History and Habits. By Dana J. Leffingwell. Occasional Papers of the Charles R. Conner Museum, Pullman, Washington, 1928.

We find here a very full discussion of this bird as it occurs in North America. Its general distribution throughout the world is presented rather fully. The habits and the life history are then discussed more fully than we have seen in any other paper. An excellent bibliography is included. The author reviews the evidence for and against the pheasant as an economic asset, and comes to the conclusion that the balance is in favor of the bird. But to hold this status the bird must be prevented from purloining the planted kernels of corn, by applying to the latter a coating of tar; this task devolves upon the farmer. The author found that corn so treated was delayed in germination about four days. He also states that "There seems to be no basis for the belief that pheasants destroy the nests or interfere seriously with other game birds."—T. C. S.

A Systematic Classification for the Birds of the World. By Alexander Wetmore. Reprinted as a separate from Proc. U. S. Nat. Museum, Vol. 76, Art. 24, pp. 1-8. 1929.

This paper of eight pages gives a compact outline of the newer classification of the birds of the world, including all the categories down to, and including, families. It includes the fossil groups also. It is an extension of the same arrangement proposed by the author and the late W. deWitt Miller for the forthcoming A. O. U. Check-List and published in the *Auk* (1926, XLIII, 337-346), and based in general on the system of Gadow. A few changes from the 1926 list are noted, and the name of one superorder is misspelled. This latest arrangement is made up of 33 orders, including 190 families. Those who wish to keep informed on the progress of taxonomic ornithology will find this paper a very useful source of reference.—T. C. S.

A Recount of the Baltimore Orioles Nesting in Mount Pleasant, Iowa. By H. E. Jaques. Proc. Ia. Acad. Sci., XXXV, 1928, pp. 305-306.

In the winters of 1921 and 1927, after the leaves had fallen from the trees, the author and his students made a count of the nests of this species in the town, and also kept track of the kinds of trees occupied. A total of 123 nests were found in 1921, and 132 in 1927. The soft maple was the preferred tree, the white elm second, boxelder third, with seven other kinds of trees used in less numbers. The constancy in oriole population over a period of six years is quite remarkable. The inference seems to be clear that the birth rate about equals the death rate—that Nature is a very clever adjuster.—T. C. S.

How to Make a Cat Trap. By James Silver and Frank N. Jarvis. Leaflet No. 50, U. S. Biol. Survey, Washington, D. C., 1929. Pp. 1-4. Price, 5 cents.

Full directions for making and using such a trap are given.—T. C. S.

"Framing" the Birds of Prey. An Arraignment of the Fanatical and Economically Harmful Campaign of Extermination Being Waged Against the Hawks and Owls. By Davis Quinn. Privately published by the author, 3548 Tryon Ave., Bronx, New York, N. Y., 1929. Pp. 1-20. Free.

The author makes a vigorous protest against the indiscriminate slaughter of the birds of prey. Considerable information on this subject is here gathered together in compact form.—T. C. S.

Birds and Mammals of the Mount Logan Expedition, 1925. By Hamilton Laing, P. A. Taverner, R. M. Anderson. In Bulletin 56, Annual Report for 1927, National Museum of Canada, 1929. Pp. 69-107.

Eighty-five birds and seventeen mammals are listed as a result of this expedition. The work of this expedition seems to have been done chiefly in the southwestern corner of the Yukon Territory. The annotations contain numerous critical notes of much interest and value, e. g., on the Solitary Sandpiper. We are glad to observe that a technical and scientific paper can be prepared with binomial nomenclature, as evidenced here.—T. C. S.

Osteology of the California Road-Runner Recent and Pleistocene. By Leigh Marian Larson. Univ. Calif. Publ. Zool., Vol. 32, No. 4, 1930. Pp. 409-428, Figs. 1-3.

This essay will be of interest to morphologists. Most of us would not attempt to identify a Road-runner which lived 100,000 years ago. But the specialist not only recognizes the bones but points out the differences from the bones of the corresponding bird that lives today, and furthermore speculates upon the ecological relationships of the ancient race. Osteological evolution in this bird has advanced so slightly that the living race and the Pleistocene race are both referred to the same species.—T. C. S.

Birds of the Portland Area, Oregon. By Stanley G. Jewett and Ira N. Gabrielson. Pac. Coast Avifauna, No. 19, Berkeley, California, 1929. Pp. 1-54, Figs. 1-21. Price, $2.

The authors list 186 birds for the area immediately surrounding Portland. Twenty-one introduced species and six hypothetical species are also given. A list of this kind is useful for local purposes and also to outsiders who may be spending a vacation in the region treated.—T. C. S.

Birds of the Past in North America. By Alexander Wetmore. Report Smith. Inst. for 1928, Washington, D. C., 1929. Pp. 377-389, Pls. 1-11.

An up-to-date account of American fossil birds is presented in this paper.—T. C. S.

Manual for Bird Banders. By Frederick C. Lincoln and S. Prentiss Baldwin. Misc. Pub. No. 58, U. S. Dept. Agric, Washington, D. C., 1929. Pp. 1-112, Figs. 1-70. Price, 30 cents.

As the title suggests this booklet is a manual of instruction for the bird bander, and, doubtless, most active banders have already received a copy of it. It includes a full discussion of traps of all kinds, minor trapping equipment, bait, bands, reports, etc. The single paragraph on the history of banding seems to be inadequate even for a publication of this kind, though the authors doubtless consider that the history has been sufficiently covered in earlier publications.—T. C. S.

The Birds of Dane County, Wisconsin. By A. W. Schorger. Wisc. Acad. Sci. Arts & Lett., XXIV, 1929. Pp. 457-499.

This paper is the first installment of a local list. It follows the new classification, which the A. O. U. is expected to adopt in the new check-list. On this basis the present list covers the ground from Gaviidae to Picidae, inclusive.—T.C.S.

The White Pine Weevil (Pissodes strobi Peck), Its Biology and Control. By Harvey J. MacAloney. Bull. N. Y. State Coll. Forestry, III, No. 1, Feb., 1930.

We mention this entomological paper because of a page (p. 56) of discussion of the role played by birds in checking this insect pest of the forest. At least seven birds are named which feed upon the larvae of this beetle, and the Downy is the only woodpecker included. "The birds actually observed in various localities comprise the white-breasted nuthatch, downy woodpecker, chickadee, rose-breasted grosbeak and certain warblers which were not identified." This is not a positive statement that these birds uncover and eat the larvae from the leader stems of the tree, but the context affords the inference that they do; and we are left to assume that this benefits the growing tree.—T. C. S.

Propagation of Upland Game Birds. By W. L. McAtee. U. S. Dept. Agric. Farmers' Bull. No. 1613, Washington, D. C., 1930. Pp. 1-60, Figs. 1-35. Price, 10 cents.

This is a general discussion of interest primarily to breeders. The greater part of the text refers to the methods of breeding the Ring-necked Pheasant, with some consideration of the Bob-white, Hungarian Partridge, and Wild Turkey. It may probably be assumed that this breeding work has assumed such proportions as to command the time and effort of the scientific staff of the Government. And yet there are many who believe that much of the effort in this direction will eventually work out to the distinct disadvantage of the native birds. Of course, we think that it would be far better to make it possible for these birds to breed naturally and abundantly in their own habitats, and thus to maintain the hunting supply.—T. C. S.

GAME BIRDS SUITABLE FOR NATURALIZING IN THE UNITED STATES. By W. L. McAtee. U. S. Dept. Agric. Circ. No. 96, Washington, D. C., 1929. Pp. 1-23, figs. 1-14. Price, 10 cents.

The first paragraph of this paper is as follows: "Sportsmen share the admiration of nature students for native game birds and will cooperate to the fullest extent in preventing their extermination, but they see the necessity for using exotic species also if the game supply is to be maintained or increased. Such increase is widely demanded, and to effect it necessitates the fostering of birds that respond most profitably to game-propagation methods. Where native game birds are abundant there is little or no need to plant exotic species; but where native species do not suply the demand, foreign game birds are being introduced. Let the native game birds enjoy the protection of game sanctuaries as numerous and extensive as can be afforded, but on those parts of our domain where public shooting is practiced and its continuance is desired, the practical necessities of the situation require the use of species of game birds that will produce the best results, regardless of their origin."

We may accept this meticulously worded statement as the present policy of the Biological Survey and the Department of Agriculture. "Let the native game birds enjoy the . . . sanctuaries" if they can find any, but turn the exotics loose to enjoy the world. And, dear bird lover, if you live near a game bird sanctuary, fortunately, you may now and then see a native game bird, but off the sanctuary expect only aliens. This is now the settled policy of exterminatory displacement of the Biological Survey if Circular 96 means what it implies. We do not for a moment believe that the author of this bulletin prefers exotic to native birds, and we doubt if his personal judgment approves the wholesale importation of foreign species to this country. We can not believe that the scientific staff of the Biological Survey is in favor of this. Our past and present experiences with exotic races would make us all conservative in this direction. There must be sinister pressure from some source behind a policy of this kind. What we need and want is more effort to strengthen our native species—not by artificial propagation, but by regulation and control of the environmental factors, so as to permit the birds to propagate naturally. We do not object to hunting *per se*, but excessive hunting leads to extermination, to which everyone, who has given any consideration to the matter, does object. Let us remove the demand for importation of foreign birds by increasing the abundance of the native species. This is a proper and natural field of effort for the U. S. Department of Agriculture. Importation is the line of least resistance so far as the hunting problem is concerned, and is unworthy of an organization with the potential force of a government bureau. We are constrained to believe that the outlook for native wild life is not bright under the present federal regime. We are glad to call attention to a number of instructive maps in this bulletin, viz., one showing the average annual precipitation of the world, another showing the distribution of the major classes of vegetation over the earth, the average January and July temperatures, distribution of native vegetation in the United States, etc. Then, of course, there are brief accounts of the various game birds, chiefly gallinaceous, which have been introduced into this country or which are recommended for introduction.—T. C. S.

PROPAGATION OF AQUATIC GAME BIRDS. By W. L. McAtee. U. S. Dept. Agric. Farmers' Bull. No. 1612, Washington, D. C., 1930. Pp. 1-40, Figs. 1-25. Price, 10 cents.

The whole subject of artificial propagation is here considered from the practical angle, with special attention to the Mallard and the Canada Goose.—T. C. S.

The number of mimeographed quasi-publications seems to be increasing—two new ones having come to our attention recently. The *Raven* (Vol. I, No. 1, January, 1930) is issued by the Virginia Society of Ornithology. This publication received a small initial subsidy from the State Fish and Game Commission. (Edited by Dr. J. J. Murray, Lexington, Va., $1.50 per year). The *Snowy Egret* is a 17-page leaflet issued by the bird students at Berrien Springs, Mich., and is substantially bound with a cover. ($1 per year, H. A. Olsen, Berrien Springs, Mich.). We have received two more copies of the *Flicker*, issued by the Minnesota Bird Club (Charles Evans, 3250 47th Ave. S., Minneapolis, $1 per year). The last number received was Vol. II, No. 2, March-April, 1930. *Letter of Information* is issued monthly with regularity by the Nebraska Ornithologists' Union (Prof. M. H. Swenk, Secretary-Treasurer, 1410 N 37th St., Lincoln, $2 per year). No. 50 is the last issue. *North Dakota Bird Notes* is issued at intervals by Prof. O. A. Stevens, North Dakota Agricultural College, Fargo. The I. O. U. *Bulletin*, issued quarterly by the Iowa Ornithologists' Union has recently appeared in printed rather than mimeographed form, though it retains the same page size. The last issue received was for January-February, 1930. (Edited by Dr. F. L. R. Roberts, Spirit Lake, Iowa, $1 per year). *Inland Bird Banding News* has issued three numbers (M. J. Magee, Treasurer, Sault Ste. Marie, Mich., $2.50 per year). *News from the Bird Banders* is issued quarterly by the Western Bird Banding Association, and is very neatly mimeographed on a good quality of paper (Walter I. Allen, Bus. Mgr., 2057 Pepper Drive, Altadena, Calif.).

We may also mention several local publications which appear in print. The *Wren-Tit* is a four-page circular issued by the Santa Clara Valley Audubon Society four times a year (Dr. Gayle B. Pickwell, State Teachers College, San Jose, Calif. The circular alone is 25 cents per year). The *Florida Naturalist* is published quarterly by the Florida Audubon Society (edited by R. J. Longstreet, Daytona Beach, Fla., $1 per year). We acknowledge the January and April, 1930, numbers, Vol. III, Nos. 2 and 3. The *Murrelet*, which has hitherto been issued as a mimeographed sheet by the Pacific Northwest Bird and Mammal Society, now appears as a 28-page tri-annual printed magazine, and we acknowledge Vol. XI, No. 1, January, 1930, in the new form. The rate is $1.50 per year, subscriptions to be sent to Leo K. Couch, Old Capitol Bldg., Olympia, Wash. The *Annual Bulletin* of the Illinois Audubon Society for 1930 appeared in April, and contains the customary splendid collection of notes and information. An exceptionally fine photograph of the Wilson's Snipe provides the frontispiece. This does not purport to be a complete list of such publications, but only a record of those which we have received during the last six months or so. We are glad to give all the encouragement we can to these local organizations and publications. They help much to develop interest in ornithology, to preserve the material, and to advance the science. They are all glad to receive subscriptions from any part of the country.

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Widmann, Otto, 5105 Enright Avenue, St. Louis, Missouri.....1897

Sustaining Members

Bailey, Harold H., 206 Exchange Building, Miami, Florida.....1908
Baldwin, S. Prentiss, 11025 East Boulevard, Cleveland, Ohio.....1920
Bales, Blenn R., M. D., 149 West Main Street, Circleville, Ohio.....1923
Barnes, Hon. R. M., Lacon, Illinois.....1909
Bent, Arthur Cleveland, 140 High Street, Taunton, Massachusetts.....1893
Bishop, Dr. Louis B., 450 Bradford Street, Pasadena, California.....1903
Blain, Dr. Alexander W., 2201 Jefferson Avenue, East, Detroit, Michigan.....1902
Boyce, James G., 422 West Ninth Street, Texarkana, Texas.....1924
Brandt, Herbert W., 14507 Shaker Boulevard, Cleveland, Ohio.....1914
*Bretsch, Clarence, 690 Broadway, Gary, Indiana.....1925
Bruen, Frank, 22 High Street, Bristol, Connecticut.....1902
Chambers, W. Lee, 2068 Escarpa Drive, Eagle Rock, California.....1909
Coffin, Lucy V. Baxter, care of Marie Baxter, 122 South West Seventh Street Richmond, Indiana.....1906
Coffin, Percival Brooks, 5708 Kenwood Avenue, Chicago, Illinois.....1911
Colburn, Albert E., 716 South Flower Street, Los Angeles, California.....1928
Conover, Henry Boardman, 6 Scott Street, Chicago, Illinois.....1922
Crosby, Maunsell S., Grasmere Farms, Rhinebeck, New York.....1904
*Ellis, Ralph, Jr., Jericho, Long Island, New York.....1926
Fordyce, George Lincoln, 40 Lincoln Avenue, Youngstown, Ohio.....1914
Ganier, Albert Franklin, 2507 Ashwood Avenue, Nashville, Tennessee.....1915
Goodrich, Mrs. Calvin, care of University Museum of Zoology, Ann Arbor, Michigan.....1915
Gray, D. R., Box 152, Mount Pleasant, Tennessee.....1914
Griscom, Ludlow, Museum of Comparative Zoology, Cambridge, Mass.....1926
Haarer, John W., 207 St. Joseph Street, West, Lansing, Michigan.....1930
Kennard, Frederic Hedge, 246 Dudley Road, Newton Center, Massachusetts.....1922
Knickerbocker, C. K., 1214 McCormick Building, Chicago, Illinois.....1916
Kuser, J. Dryden, Bernardsville, New Jersey.....1913
Loesch, Frank J., Room 1540, 10 South LaSalle Street, Chicago, Illinois.....1928
*Lyon, W. I., 124 Washington Street, Waukegan, Illinois.....1921
McIlhenny, Edward Avery, Avery Island, Louisiana.....†1910
Magee, Michael J., 603 South Street, Sault Ste. Marie, Michigan.....1919

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§Deceased.
*Life Member.
†Rejoined.

Mershon, Wm. Butts, Saginaw, Michigan....1910
Mills, Weir R., Pierson, Iowa....1914
Mitchell, Dr. Walton I., 1644 Visalia Avenue, Berkeley, California....1894
Monk, Harry C., Avoca Apartments, Nashville, Tennessee....1920
Nelson, Miss Theodora, Hunter College, 66 Court Street, Brooklyn N. Y....1928
Norris, Roy C., R. R. B., Richmond, Indiana....1921
Osgood, Dr. Wilfred Hudson, Field Museum of Natural History, Chicago, Illinois....1910
Perkins, Samuel E., 709 Inland Bank Building, Indianapolis, Ind....1924
Phelps, Frank M., 130 Cedar Street, Elyria, Ohio....1912
Philipp, Philip Bernard, St. Paul Building, 220 Broadway, New York, N .Y....1918
Rich, Waldo L., 15 Rock Street, Saratoga Springs, New York....1920
Richmond, Dr. Chas. Wallace, 1929 Park Road, N. W., Washington, D. C....1922
Roberts, Dr. Thos. S., Museum of Natural History, University of Minnesota, Minneapolis, Minnesota....1914
Rogers, Charles Henry, Princeton Museum of Zoology, Princeton, N. J....1903
Saunders, W. E., 352 Clarence Street, London, Ontario, Canada....1902
Schaefer, Oscar Frederick, 724 Woodbine Avenue, Rochester, New York....1921
Scott, R. H., 109 West Main Street, Lansing, Michigan....1930
Shearer, Dr. Amon Robert, Mont Belvieu, Chambers County, Texas....1893
Simons, Joseph, Room 959, 231 South LaSalle Street, Chicago, Illinois....1928
Stephens, T. C., Morningside College, Sioux City, Iowa....1911
Stoddard, H. L., U. S. Bureau of Biological Survey, Washington, D. C....1916
Sutton, George Miksch, Bethany, West Virginia....1920
Swenk, Prof. Myron H., 1410 North 37th Street, Lincoln, Nebraska....1914
*Taylor, Mrs. H. J., 2813 Channing Way, Berkeley, California....1916
*Taylor, Dr. A. C., University General Hospital, Madison, Wis....1929
Thayer, John Eliot, Box 98, George Hill Road, Lancaster, Massachusetts....1903
Tucker, Mrs. Carl Penwood, Mount Kisco, New York....1928
Uhrig, Mrs. A. B., Oconomowoc, Wisconsin....1926
Willard, F. C., Farmingdale, Long Island, New York....1924
Wing, Leonard W., R.F.D. No. 3, Jackson, Michigan....1924
Young, Colonel John P., Renwick Drive, Ithaca, New York....1913

Active Members

Allen, Dr. Arthur A., McGraw Hall, Cornell University, Ithaca, New York....1914
Anderson, Edwin C., R.F.D. No. 4, Dell Rapids, South Dakota....1921
Armstrong, Edward Elton, 2249 Calumet Avenue, Chicago, Illinois....†1921
Ayers, Douglas, Jr., 111 Canah Street, Fort Plain, New York....1924
Bachmann, Dr. Harrold, 2340 Lincoln Park, West, Chicago, Illinois....1928
Bailey, Alfred M., Chicago Academy of Science, Chicago, Illinois....1928
Bailey, Mrs. Florence Merriam, 1834 Kalorama Road, Washington, D. C....1911
Bailey, Mrs. Mary L., 2109 Nebraska Street, Sioux City, Iowa....1918
Baird, Robert L., 279 Oak Street, Oberlin, Ohio....1902
Bamberg, John, Y. M. C. A., Memphis, Tennessee....1930
Bartsch, Dr. Paul, U. S. National Museum, Washington, D. C....1894
Bellah, L. P., Union Station, Nashville, Tennessee....1926
Bennett, Walter W., 309 Warnock Building, Sioux City, Iowa....†1925
Bergtold, Dr. William Harry, 1159 Race Street, Denver, Colorado....1916
Black, J. D., Winslow, Arkansas....1925
Blincoe, Benj. J., Route 13, Dayton, Ohio....1920
Book, Miss Lois Adelaide, 733 Franklin Street, Columbus, Indiana....1930
Bowman, Paul W., George Washington University, Washington, D. C....1927
Breckenridge, Walter J., Museum of Natural History, University of Minnesota, Minneapolis, Minnesota....1930
Brooks, Major Allan, Okanagan Landing, British Columbia, Canada....1930
Bruun, Chas. A., 1510 Central Avenue, Hot Springs, Arkansas....1921
Bryens, Oscar McKinley, McMillan, Luce County, Michigan....1924
Burdick, Harold C., 232 East Bloomington, Iowa City, Iowa....1929
Burdick, Dr. George Merton, Box 176, Milton, Wisconsin....1921
Burleigh, Thos. D., 612 City Hall, Asheville, North Carolina....1923
Burleigh, Dr. W. J., 53 Aberdeen Place, Hillcrest, St. Louis, Missouri....1927

Burtch, Verdi, Branchport, New York....1924
Butler, Dr. Amos W., 52 Downey Avenue, Indianapolis, Indiana....1911
Butler, Rev. L. Ermil, First Methodist Episcopal Church, Bidwell, Ohio....1926
Cahn, Dr. Alvin R., 902 West Nevada Street, Urbana, Illinois....1917
§Calhoun, Geo. R., 1 Memorial Building, Nashville, Tennessee....1928
Carroll, J. J., Box 356, Houston, Texas....1926
Cavaness, Sallie E., 600 North Main, Monticello, Arkansas....1923
Chapman, Dr. Frank M., American Museum of Natural History, 77th Street and Central Park West, New York, New York....1910
Clay, Miss Marcia B., Bristolville, Ohio....1925
Clow, Miss Marion, Box 163, Lake Forest, Illinois....1929
Coffel, Hal. H., Pennville, Jay County, Indiana....1929
Coffey, Ben, 1434 Bank of Commerce Building, Memphis, Tennessee....1927
Cole, Dr. Leon J., Agricultural-Chemical Building, Madison, Wis....1921
Commons, Frank W., 608 Chamber of Commerce, Minneapolis, Minnesota....1923
Cook, G. M., 39 Tod Lane, Youngstown, Ohio....1923
Cookman, Alfred, 517 McKinley Avenue, Pomona, California....1928
Coryell, Sherman, 1500 Hood Avenue, Chicago, Illinois....1920
Coursen, C. Blair, 651 East 69th Place, Chicago, Illinois....1927
Danforth, Stuart T., College of Agriculture, Mayaguez, Porto Rico....1925
Darling, A. B., 4501 Country Club Boulevard, Sioux City, Iowa....1925
Deane, Ruthven, 1222 North State Street, Chicago, Illinois....1910
Deane, Walter, 29 Brewster Street, Cambridge, Massachusetts....1903
DeLury, Dr. Ralph E., Dominion Observatory, Ottawa, Ontario, Canada....1921
Dickey, Donald R., California Institute of Technology, Pasadena, California....1912
Dolman, Helen, 1010 Washtenaw Avenue, Ypsilanti, Michigan....1929
Donaghho, Walter, Box 532, Parkersburg, West Virginia....1920
Doolittle, E. A., Box 44, Painesville, Ohio....1925
Dorsey, George A., Box 163, Emory University, Atlanta, Georgia....1927
Douglas, Donald W., 917 Ninth Avenue, Grinnell, Iowa....1929
Dunkelberger, Harry W., Box 6, Flourtown, Montgomery County, Penna....1922
Dunlap, M. Sigsbee, 8163 Madison, Southgate, California....1926
Earl, Thomas M., R.F.D. No. 2, Xenia, Ohio....1921
Eddy, Samuel, Zoology Building, University of Minnesota, Minneapolis, Minnesota....1925
Ehinger, Dr. C. E., 730 Grand Avenue, Keokuk, Iowa....1926
Eifrig, Prof. C. W. G., 1029 Monroe Avenue, River Forest, Illinois....1907
Ekblaw, Dr. George E., 233 West Orleans, Paxton, Illinois....1914
Ekblaw, Dr. W. Elmer, Clark University, Worcester, Massachusetts....1910
Emilio, S. Gilbert, 7 Winter Street, Salem, Massachusetts....1930
Evans, Dr. Evan M., 550 Park Avenue, New York City....1929
Fargo, W. G., 506 Union Street, Jackson, Michigan....1923
Fetter, Dorothy, Winthrop College, Rock Hill, South Carolina....1927
Fields, E. A., 2111 Douglas Street, Sioux City, Iowa....1925
Fifield, Lewis E., 14 Beekman Street, Plattsburg, New York....1923
Fleming, James Henry, 267 Rusholme Road, Toronto 4, Ontario, Canada....1906
Flores, Ismael, 16 Basora Street, Mayaguez, Porto Rico....1929
Floyd, Joseph L., 1009-11 Geo. D. Harter Bank Building, Canton, Ohio....1903
Ford, Edward Russell, 1224 Isabella Street, Wilmette, Illinois....1914
Frazer, T. Atchison, M. D., Marion, Kentucky....1930
Gabrielson, Ira N., 516 Post Office Building, Portland, Oregon....1913
Gault, Benjamin True, 424 South Main Street, Glenn Ellyn, DuPage County, Illinois....1895
Gillespie, R., Bay City Business College, Bay City, Michigan....1930
Gilliam, R. A., 1123 Cedar Hill Avenue, Station A., Dallas, Texas....1924
Gleason, Jr., Clark H., Box 47, Placerville, California....1929
Gleason, Louisa R. (Mrs. Clark H.), 700 Madison Avenue, South East, Grand Rapids, Michigan....1921
Gloyd, Howard K., University of Michigan, Ann Arbor, Michigan....1925
Goddard, Henry N., Western State Normal School, Kalamazoo, Michigan....1926
Gowans, Ethel, 308 South Lincoln Street, Kent, Ohio....1925
Grass, Arthur M., 339 B Street, N. E., Linton, Indiana....1930

Green, Prof. George Rex, Department of Nature Education, The Pennsylvania State College, State College, Pennsylvania....1930
Gregory, Stephen S. Jr., Box N., Winnetka, Illinois....1922
Grinnell, Dr. Joseph, Museum of Vertebrate Zoology, University of California, Berkeley, California....1914
Guest, Marjorie Lee, State Hospital, Athens, Ohio....1924
Guthrie, Prof. Joseph E., 319 Lynn Avenue, Ames, Iowa....1922
Handley, Chas. O., Ashlund, Virginia....1925
Hankinson, Prof. T. L., 96 Oakwood Avenue, Ypsilanti, Michigan....1911
Harris, Harry, 5234 Hermosa Avenue, Eagle Rock, California....1924
Hastings, Walter E., 310 Maple Street, Howell, Michigan....1923
Haultain, Chas. Frederick, Fox Ranch, Belleville, Ontario, Canada....1924
Hayward, W. J., 2919 Jackson Street, Sioux City, Iowa....1913
Heft, Russell D., Kingston, Ohio....1928
Henderson, Archibald Douglas, Belvedere, Alberta, Canada....1922
Henderson, Prof. Junius, 1305 Euclid Avenue, Boulder, Colorado....1903
Herrick, Dr. Francis H., Biological Laboratory, Western Reserve University, Cleveland, Ohio....1916
Hine, Professor James S., Ohio State University, Columbus, Ohio....1910
Hinshaw, Thomas D., 1908 Scottwood Avenue, Ann Arbor, Michigan....1926
Hoffman, E. C., 1041 Forest Cliff Drive, Lakewood, Ohio....1925
Holcombe, C. E., 2917 Ezra Avenue, Zion, Illinois....1927
Holt, Ernest Golsan, care of Mr. H. B. Leonard, 3951 Forty-fourth Street, Long Island City, New York....1926
Honywill, Albert William, Jr., 17400 Wildemere Avenue, Detroit, Michigan....1920
Horsky, L. O., Mailing Division, P. O., Burlington Postal Station, Omaha, Nebraska....1924
Howell, Arthur Holmes, 2919 South Dakota Avenue, Washington, D. C....1921
Hunt, Chreswell J., 810 South Eighteenth Avenue, Maywood, Illinois....1904
Hunt, J. Steger, 605 East Fifth Street, Tuscumbia, Alabama....1926
Hutchinson, Chas., 500 Crocker Building, Des Moines, Iowa....1930
Hyde, B. T. B., 558 Camino del Monte Sol, Santa Fe, New Mexico....1928
Johns, Dr. Edwin W., 645 Remington, Fort Collins, Colorado....†1925
Johnson, Dr. John C., State Teachers College, West Chester Pennsylvania....1926
Jung, Clarence S., 518 Stratford Street, Milwaukee, Wisconsin....1921
Kahmann, Karl W., R.F.D. No. 2, Hayward, Wisconsin....1914
Kee, Hunter, 36 Ninth Avenue, Marlinton, West Virginia....1922
Keyes, Prof. Chas. R., Cornell College, Lock Box J, Mount Vernon, Iowa....1925
Kirn, Albert J., Box 157, Somerset, Texas....1918
Kretzmann, Dr. Paul E., 801 DeMun Avenue, St. Louis, Missouri....1924
Lambert, Earl Logan, 237 North First Street, Carthage, Illinois....1922
Lancaster, Esther A., Route 3, Hutchinson, Kansas....1927
Larrabee, Prof. Austin P., Yankton College, Yankton, South Dakota....1921
Laskey, Mrs. F. C., Route 9, Graybar Lane, Nashville, Tennessee....1928
Law, J. Eugene, Box 247, Altadena, California....1911
Lee, George Frederick, M. D., Ph. D., Florence, South Carolina....1926
§Leffingwell, Dana J., Pullman, Washington....1926
Leopold, Aldo, 222 Van Hise Avenue, Madison, Wisconsin....1928
Levings, James Eads, 420 West Court Street, Paris, Illinois....1929
Lewis, John B., Amelia, Virginia....1924
Lewy, Dr. Alfred, 2051 East Seventy-second Place, Windsor Park Station, Chicago, Illinois....1916
Lindsey, E. A., Tennessee-Hermitage National Bank, Nashville, Tennessee....1924
Lodbell, Prof. Richard Nugent, Department of Zoology, A. & M. College, Mississippi....1921
Longstreet, Rupert James, Daytona Beach, Florida....1924
Loring, J. Alden, Owego, Tioga County, New York....1926
Lowe, John N., Northern State Teachers College, Marquette, Michigan....1927
Luther, Geo. W., DeTour, Michigan....1926
Lutz, Emelie, 161 West Harrison Street, Chicago, Illinois....1926
Lyon, Mary C., 811 North Sheridan Road, Waukegan, Illinois....1925

McAtee, W. L., Biological Survey, United States Department of Agriculture, Washington, D. C. †1911
McCabe, T. T., Barkerville, British Columbia, Canada 1928
McGowan, Hamilton G., 397 Fourth Street, N. E., Atlanta, Georgia 1928
McGregor, Richard C., Bureau of Science, Manila, Philippine Islands 1919
McNeil, Dr. Chas. A., 111 West Fourth Street, Sedalia, Missouri 1922
Madison, Allan A., Box 182, Flaxton, North Dakota 1927
Magann, J. Wilbur, 1111 Holley Court, Oak Park, Illinois 1927
Main, John Smith, 610 State Street, Madison, Wisconsin 1921
Molcomson, R. O., 1603 Ross Street, Sioux City, Iowa †1926
Marsh, Mai, 1005 Lexington Avenue, Altoona, Pennsylvania 1927
Mayfield, Dr. George R., Vanderbilt University, Nashville, Tennessee 1917
Metcalf, Dr. Franklin P., care of Arnold Arboretum, Harvard University, Jamaica Plain, Massachusetts 1919
Metcalf, Dr. Zeno P., State College, West Raleigh, North Carolina 1900
Middleton, Raymond Jones, Marshall Street and Whitehall Road, Norristown Delivery, Jeffersonville, Pennsylvania 1921
Millard, Mrs. F. A., 1032 North Fourth Street, Burlington, Iowa 1926
Minich, Edward C., 1047 Fairview Avenue, Youngstown, Ohio 1923
Mitchell, Catharine Adams, 144 Fairbank Road, Riverside, Illinois 1915
Moore, Arthur David, 712 Phoenix Street, South Haven, Michigan 1922
Moore, Mrs. Nettie Purdy, 941 Starkweather Avenue, Plymouth, Michigan 1925
Morris, C. H., McConnelsville, Ohio 1911
Morse, Harry G., Huron, Ohio 1923
Morse, Margarette E., Viroqua, Wisconsin 1922
Moseley, Prof. Edwin Lincoln, State College, Bowling Green, Ohio 1921
Mote, G. A., Marshalltown, Iowa 1930
Mounts, Mrs. Beryl Taylor (Mrs. Lewis H.), Ballard Normal School, Macon, Georgia 1923
Mueller, Mrs. Hans, Willow Terrace, Apartment 81, Louisville, Kentucky 1923
Neff, Johnson A., Marionville, Missouri 1921
Nice, Mrs. Margaret M., 156 West Patterson Avenue, Columbus, Ohio 1921
Norris, Joseph P., Jr., 2122 Pine Street, Philadelphia, Pennsylvania 1911
Northup, Elizabeth A., 436 Warren Avenue, Youngstown, Ohio 1920
Oberholser, Dr. Harry Church, 2805 Eighteenth Street, N. W., Washington, D. C. 1894
Ohern, D. W., 915 West Fourteenth Street, Oklahoma City, Oklahoma 1921
Olsen, Richard E., 1120 East Ann Street, Ann Arbor, Michigan 1930
Ortega, James L., Box 171, R.F.D. No. 4, Santa Anna, California 1924
Over, Prof. Wm. H., University Museum, Vermillion, South Dakota 1930
Palas, A. J., 663 Forty-ninth Street, Des Moines, Iowa 1923
Palmer, Dr. Theodore Sherman, 1939 Biltmore Street, N. W., Washington, D. C. 1914
Pammel, Dr. L. H., Iowa State College, Ames, Iowa 1929
Parker, Herbert, South Lancaster, Massachusetts 1928
Pemberton, John Roy, 525 North Palm Drive, Beverly Hills, California 1922
Pennock, Charles John, Kennett Square, Chester County, Pennsylvania 1900
Phillips, Dr. John H., 2117 Blair Boulevard, Nashville, Tennessee 1921
Pickwell, Dr. Gayle B., Department of Natural Sciences, San Jose State Teachers College, San Jose, California 1925
Plapp, Doris Anne, 4140 North Keeler Avenue, Chicago, Illinois 1927
Plath, Karl, 2847 Giddings Street, Ravenswood Station, Chicago, Illinois 1916
Porter, James V., Box 266, Glenwood, Minnesota 1929
Pough, Richard H., 4 Lennox Place, St. Louis, Missouri 1924
Praeger, Prof. Wm. E., 2 College Grove, Kalamazoo, Michigan 1916
Prill, Dr. Albert G., Main Street, Scio, Oregon 1892
Quillian, Prof. Marvin C., Wesleyan College, Macon, Georgia 1927
Randall, Mrs. W. S., 618 East Fifteenth Street, Oklahoma City, Oklahoma 1925
Reed, Mrs. C. I. (Bessie P.), 1615 South Ninth Avenue, Maywood, Illinois 1924
Reid, Mrs. Bruce (Bessie M.), care of Gulf Refinery, Port Arthur, Texas 1921
Reid, Russell, 911 Sixth Street, Bismarck, North Dakota 1920

Richardson, W. D., 4215 Prairie Avenue, Chicago, Illinois....1918
Riley, Joseph Harvey, U. S. National Museum, Washington, D. C....1914
Roads, Katie M., 463 Vine Street, Hillsboro, Ohio....1914
Robinson, J. M., Box 264, Alabama Polytechnic Institute, Auburn, Alabama....1923
Rodock, Roy E., Lewistown State Normal School, Lewistown, Idaho....1928
Rosene, Walter M., Ogden, Iowa....1923
Ross, Marjorie Ruth, 420 Eddy Street, Ithaca, New York....1921
Rust, Henry J., Box 683, Coeur d'Alene, Idaho....1921
Sallee, Roy M., 131 North Normal Street, Macomb, Illinois....1930
Satterthwait, Elizabeth Allen, Webster Groves, Missouri....1925
Savage, James, Buffalo Athletic Club, Buffalo, New York....1930
Schantz, O. M., 3219 Maple Avenue, Berwyn, Illinois....1903
Schorger, Dr. A. W., 2021 Kendall Avenue, Madison, Wisconsin....1927
Shadle, Prof. Albert R., Biology Department, University of Buffalo, Buffalo, New York....1930
Sherwood, Jack W., Box 264, Salinas, California....1929
Silliman, Oscar Peny, Corner Alisal and Riker Streets, Salinas, Monterey County, California....1914
Simmons, Geo. Finlay, 2727 Euclid Avenue, Cleveland, Ohio....1928
Skinner, M. P., Jergins Trust Company Building, Long Beach, California....1926
Smith, Prof. Frank M., 79 Fayette Street, Hillsdale, Michigan....1910
Smith, Prof. Jesse L., 334 Vine Street, Highland Park, Illinois....1925
Smits, Lee J., 83 Hendrie Avenue, Detroit, Michigan....1928
Spann, Liza, Boiling Springs Junior College, Boiling Springs, North Carolina....1930
Spear, James, Wallingford, Pennsylvania....1928
Spiker, Chas. J., New Hampton, Iowa....1916
Spofford, Walter R., Highland Road, Berlin, Massachusetts....1926
Stack, Prof. Joseph W., Department of Zoology, Michigan State College, East Lansing, Michigan....1925
Stewart, Clare R. (Mrs. L. P.), 3475 Morrison Place, Cincinnati, Ohio....1923
Stickney, Gardner P., 864 Summit Avenue, Milwaukee, Wisconsin....1922
Stoner, Dr. Dayton, New York State College of Forestry, Syracuse, N. Y....1917
Strecker, John Kern, Baylor University, Waco, Texas....1929
Stuart, Anne, 1905 D. Street, Lincoln, Nebraska....1924
Stucker, Gus, 108 Bellaire Avenue, Springfield, Ohio....1923
Sturgis, Mrs. S. D., 2219 California Street, N. W., Washington, D. C....1928
Swarth, Harry S., 2800 Prince Street, Berkeley, California....1910
Taylor, Prof. Warner, 219 Clifford Court, Madison, Wisconsin....1917
Teachenor, Dix, 1020 West Sixty-first Street, Kansas City, Missouri....1923
Thomas, Edward S., 1116 Madison Avenue, Columbus, Ohio....1921
Thomas, H. H., 1124 East Main Street, Pomeroy, Ohio....1924
Tinker, Almerin David, 519 Oswego, Ann Arbor, Michigan....1909
Todd, W. E. Clyde, Carnegie Museum, Pittsburgh, Pennsylvania....1911
Townsend, Dr. Chas. W., Ipswich, Massachusetts....1916
Travis, Florence G., 1458 Mars Avenue, Lakewood, Ohio....1921
Tyler, Dr. Winsor M., 112 Pinckney Street, Boston, Massachusetts....1914
Urner, Charles A., 596 Westminister Avenue, Elizabeth, New Jersey....1928
Van Tyne, Dr. Josselyn, Museum of Zoology, Ann Arbor, Michigan....1922
Vernon, John, Box 152, R.F.D. No. 1, South Sheridan Road, Kenosha, Wis....1929
Visscher, Dr. Paul, Biological Laboratory, Western Reserve University, Cleveland, Ohio....1924
Warren, Edward R., 1511 Wood Avenue, Colorado Springs, Colorado....1911
Weber, Alois J., 904 Grand Avenue, Keokuk, Iowa....1928
Wertz, Miss Vara M., 101 Eighth Avenue, Juniata, Pennsylvania....1928
Wetmore, Dr. Alexander, U. S. National Museum, Washington, D. C....1903
Wheeler, Rev. H. E., Alabama Museum of Natural History, University, Alabama....†1924
White, Miss Betty, Teachers College, Greenville, North Carolina....1928
White, Francis Beach, St. Paul's School, Concord, New Hampshire....1926
Wilson, Mrs. Etta S., 9077 Clarendon Avenue, Detroit, Michigan....1928
Wilson, Frank Norman, 804 Lawrence Street, Ann Arbor, Michigan....1924

Wilson, Prof. Gordon, 1434 Chestnut Street, Bowling Green, Kenutcky....1925
Wolcott, Dr. Robert H., University of Nebraska, Lincoln, Nebraska....1924
Wright, Dr. Albert H., 113 East Upland Road, Ithaca, New York....1921
Wright, Earl G., Chicago Academy of Science, Clark and Center Streets, Chicago, Illinois....1925
Yoder, William H., Jr., 4510 North Carlisle Street, Philadelphia, Penn....1926
Youngworth, William, 3119 East Second Street, Sioux City, Iowa....1927

ASSOCIATE MEMBERS

Adams, Benjamin, Wethersfield, Connecticut....1920
Adkins, T. R., 421 Aztec Building, San Antonio, Texas....1926
Ainslie, Charles Nicholas, 2000 South St. Aubin, Sioux City, Iowa....1930
Alexander, Frank M., Box 95, Wellington, Kansas....1928
Allen, A. F., 714 Thirty-fourth Street, Sioux City, Iowa....1925
Allert, Oscar P., R.F.D. No. 1, McGregor, Iowa....1923
Allison, C. W., Box 968, St. Louis, Missouri....1926
Appleman, Mrs. A. L., 2081 Lamar Boulevard, Memphis, Tennessee....1929
Aspinwall, Mrs. Clarence, 2340 Kalorama Road, Washington, D. C....1923
Avery, Eula V., 1123 Michigan Avenue, Ann Arbor, Michigan....1930
Bacus, Mrs. E. H., Howard, Kansas....1930
Baldwin, Mrs. Harry L., 7136 Ridgeland Avenue, Apartment 1, Chicago, Ill....1926
Ball, William Howard, 1861 Ingleside Terrace, N. W., Washington, D. C....1924
Barber, Bertram Alpha, 350 West Street, Hillsdale, Michigan....1923
Barkley, Mabel A., Meredith College, Raleigh, North Carolina....1930
Baroody, Mrs. Nellie J., 3130 Wenonah Avenue, Berwyn, Illinois....1927
Batchelder, C. F., 7 Kirkland Street, Cambridge, Massachusetts....1927
Bates, Rev. John Mallory, Red Cloud, Nebraska....
Baynard, Oscar E., Box 104, Plant City, Florida....†1924
Beard, Miss Mary, 406 East Fifth Avenue, Knoxville, Tennessee....1928
Beebe, Ralph, 2920 Hillger Avenue, Detroit, Michigan....1924
Bell, Glenn W., The Berry Schools, Mt. Berry, Georgia....1930
Benedict, Mrs. Howard Smith, 418 Chester, 12th Building, Cleveland, Ohio....1926
Bergman, Miss Verna, 708 South Page Street, State College, Pennsylvania....1928
Berner, Glenn, 121 East Front Street, Jamestown, North Dakota....1930
Bird, Dr. R. D., Biological Survey, University of Oklahoma, Norman, Okla....1929
Birge, Miss Willie I., College of Industrial Arts, Denton, Texas....1925
Blanchard, Dr. Frank N., Department of Zoology, University of Michigan, Ann Arbor, Michigan....1928
Blincoe, Mrs. Benjamin J., R.F.D. No. 13, Dayton, Ohio....1926
Blosser, Sallie H., State Teachers College ,Harrisonburg, Virginia....1930
Bolt, Benj. F., 225 East Forty-sixth Street, Kansas City, Missouri....1917
Bonesteel, V. C., American National Bank, Aurora, Illinois....1925
Bordner, Mrs. Robert I., Hudson, Iowa....1930
Borrer, Donald J., 177 W. Park Avenue, Columbus, Ohio....1927
Bossler, John, Hamburg, Berks County, Pennsylvania....1928
Boulton, Wolfrid Rudyard, Jr., Carnegie Museum, Pittsburg, Pennsylvania....1922
Bourland, Minnie L., 205 Lincoln Avenue, Shenandoah, Iowa....1930
Bowdish, Beecher Scoville, Demarest, New Jersey....1924
Bowman, John G., University of Pittsburgh, Pittsburgh, Pennsylvania....1928
Bradford, Miss Mary, Moline High School, Moline, Illinois....1930
Bradshaw, F., Director, Prov. Museum, Normal School, Regina, Saskatchewan, Canada....1930
Brady, Dr. John A., St. Augustine College, Lakewood, Ohio....1925
Braly, John Claude, 419 Pittock Building, Portland, Oregon....1927
Brasher, Rex, Chickadee Valley, Kent, Connecticut....1926
Bready, Mrs. Marcia B., 99 Waban Hill Road, North, Chestnut Hill, Mass....1930
Brooks, Maurice, French Creek, West Virginia....1926
Broomhall, W. H., Stockport, Ohio....1926
Brown, F. Martin, Commissioner of the Palisades Interstate Park, Iona Island, New York....1924
Browning, Miss Louanna, Box 1346, Department D, Columbus, Ohio....1930
Bruce, Jim A., 557 Spring Street, Wooster, Ohio....1929

Bruner, Mrs. H. A., 3118 Cottage Grove, Des Moines, Iowa....1930
Bryant, Lincoln, Jr., 149 Randolph Avenue, Milton, Massachusetts....1928
Buchheister, Carl W., The Lawrence School, Hewlett, Long Island, N. Y....1929
Buchner, Mrs. E. M., 2453 North Central Park Avenue, Chicago, Ill....1914
Bulthouse, Peter, R.F.D. No. 3, Napierville, Illinois....1930
Bunting, Henry, 2020 Chadbourne Avenue, Madison, Wisconsin....1930
Burcham, Frank W., 510 North Church Street, Fayette, Missouri....1929
Burket, Dr. Ivan R., Ashland, Kansas....1926
Burkhard, Fred, Accident, Maryland....1922
Burnett, Prof. W. L., State Agricultural College, Fort Collins, Colorado....1926
Burt, W. H., Museum of Vertebrate Zoology, University of California, Berkeley, California....1928
Burton, Rev. William W., Alliance, Ohio....1913
Buzby, Mrs. William, 221 Greene Street, Boone, Iowa....1930
Campbell, Louis W., 304 Fearing Boulevard, Toledo, Ohio....1926
Carlson, Prof. Carl Olof, Department of Biology, Doane College, Crete, Nebraska....1923
Carman, Mrs. F. S., R.F.D. No. 2-27, Grand Junction, Colorado....1930
Case, Mrs. F. E., 1717 Market Avenue, North, Canton, Ohio....1928
Cathcart, Maude Eola, Appalachian State Teachers College, Boone, N. C....1930
Chamberlain, Chauncey W., Hotel Hemenway, Boston, Massachusetts....1922
Chamberlain, Glen D., 102 Highland Place, Ithaca, New York....1930
Chilcott, Mrs. E. F., Woodward, Oklahoma....1923
Christianson, Anna, 1812 Jackson Street, Sioux City, Iowa....1925
Christy, Bayard H., Box 950, Pittsburgh, Pennsylvania....1922
Clark, Mrs. C. C., 922 North Third Street, Burlington, Iowa....1925
Coad, Dwight S., 300 Alexander, Rochester, New York....1927
Cole, Arthur W., 735 North Main, West LaFayette, Indiana....1926
Coleman, Mrs. Thomas, Maple Bluff, Madison, Wisconsin....1928
Coles, Victor, 2910 Grasselli Avenue, Westwood, Cincinnati, Ohio....1929
Compton, Lawrence Verlyn, University of Kansas, Lawrence, Kansas....1923
Cook, Fannye A., Crystal Springs, Mississippi....1925
Cook, Florence R., Grand Meadow, Minnesota....1930
Cook, William Bolton, Comly Avenue, Port Chester, New York....1930
Cottam, Clarence, Bureau of Biological Survey, Washington, D. C....1929
Coulter, Dr Stanley G., Purdue University, LaFayette, Indiana....1916
Couper, Mrs. E. A., Britt, Iowa....1930
Cox, P. E., Memorial Building, Nashville, Tennessee....1929
Crabb, Alfred, 1701 Eighteenth Avenue, Nashville, Tennessee....1930
Craig, Glenn C., 570 Trade Street, Florence, Alabama....1924
Cramer, Wm. G., Apartment 10, The Nelson, 2501 Kemper Lane, Cincinnati, Ohio....1923
Crook, Compton N., Jr., 2207 Leslie Avenue, Nashville, Tennessee....1929
Cunningham, O. L., County Agricultural Agent, Post Office Building, Dayton, Ohio....1930
Dales, Mrs. Marie, 14 Twenty-fourth Street, Sioux City, Iowa....1925
Danner, Mrs. Mary S., 1646 Cleveland Avenue, N. W., Canton, Ohio....1921
Davis, George, State Teachers College, Murfreesboro, Tennessee....1930
Davis, Mrs. L. N., 2016 Lexington Avenue, Ashland, Kentucky....1925
Davis, Russell S., Maple Lawn Stock Farm, Clayton, Illinois....1926
Dellinger, Prof. Samuel C., 339 Gregg Street, Fayetteville, Arkansas....1926
Denison, Maggie, Galloway College, Searcy, Arkansas....1930
Dennis, Wm. A., R.F.D. No. 1, Paris, Illinois....1930
Dille, Fred M., Niobrara Reserve, Valentine, Nebraska....1912
Dingle, Edward von Seibold, Huger, South Carolina....†1925
Dole, J. Wilbur, 51 East Stone Street, Fairfield, Iowa....1930
Doudna, Wilbur, Ottawa, Kansas....1926
Dragoo, Miss Lavinia, 1540 D Avenue, East, Cedar Rapids, Iowa....1929
DuMont, Philip A., Wilton, Connecticut....1928
DuMont, Mrs. W. G., 2700 Forty-ninth Street, Des Moines, Iowa....1929
Duncan, Mrs. Sanford, 207 Union Street, Nashville, Tennessee....1921

Durst, Richard E., R.F.D. No. 2, Willard, Ohio....1927
Duston, Mrs. A. W., 1744 South Yorktown, Tulsa, Oklahoma....1926
Earle, Samuel L., 1223 Niazuma Avenue, Birmingham, Alabama....1928
Eastman, Mrs. E. P., 719 Columbia Street, Burlington, Iowa....1926
Eastman, Fred, 2628 Dodge Street, Omaha, Nerbaska....1925
Eastwood, Sidney K., 301 South Winebiddle Avenue, Pittsburgh, Penn....1928
Edson, J. M., 90 Marietta Road, Bellingham, Washington....1928
Edwards, Mrs. W. H., Fairhope, Alabama....1929
Eheim, J. M., 236 South Adams Street, Hutchinson, Minnesota....1926
Eiffert, Paul, R.F.D. No. 1, St. Cloud, Minnesota....1927
Elrod, Mrs. Walter DeWitt, Box 103, Okmulgee, Oklahoma....1923
Ellsworth, Miss Mary, 3107 Redick Avenue, Omaha, Nebraska....1930
Emerson, William Otto, Box 39, R.F.D. No. 1, Palm Cottage, Hayward, California....1922
Erwin, Mrs. Marjorie B., Williamsburg, Iowa....1926
Evans, Virgil, Norwich, Ohio....1926
Evins, Samuel N., 38 East Fourteenth Street, Atlanta, Georgia....1922
Fekst, Henry, 1366 Third Street, Milwaukee, Wisconsin....1928
Fennell, Chester M., Box 160, R.F.D. No. 1, Olmsted Falls, Ohio....1930
Finfrock, C .M., 3186 Oak Road, Cleveland, Ohio....1926
Fischer, Donald, Shakopee, Minnesota....1928
Fisher, Dr. G. Clyde, American Museum of Natural History, New York, New York....1925
Fitzpatrick, Dr. F. L., Coe College, Cedar Rapids, Iowa....1924
Flickinger, Frederick R., 2402 Putnam Street, Toledo, Ohio....1929
Floyd, Charles B., 454 Wolcott Street, Auburndale, Massachusetts....1924
Force, Edith R., 3021 East Eighth Street, Tulsa, Oklahoma....1926
Ford, Louise P., Barnwell Avenue, Aiken, South Carolina....1921
Frankel, Mrs. Henry, 301 Tonawanda Drive, Des Moines, Iowa....1925
Franzen, A. J., Field Museum, Chicago, Illinois....1929
Frazier, John M., Station A., Box 156, Hattiesburg, Mississippi....1930
Fredholm, Miss Sadie, R.F.D. No. 5, Mountain Grove, Missouri....1930
French, Mrs. Mena, Box 171, Wayland, Massachusetts....1928
Friedrich, George Walter, 3029 Belmont Avenue, Chicago, Illinois....1914
Fryklund, P. O., Roseau, Roseau County, Minnesota....1926
Fuchs, E. H., Alma Missouri....1922
Fulton, Lester B., 7000 North Rockwell Street, Chicago, Illinois....1929
Funk, Mrs. A. B., 649 Harwood Drive, Des Moines, Iowa....1925
Funkhouser, Dr. William D., Department of Zoology, University of Kentucky, Lexington, Kentucky....1918
Gander, Miss Erma M., 604 Caldwell-Murdock Building, Wichita, Kansas....1930
Gander, Frank F., O'Rourke Zoological Institute, Balboa Park, San Diego, California....1928
Gearhart, Edwin E., R.F.D. No. 7, Bucyrus, Ohio....1928
Geist, Robert Miller, 811 Euclaire Avenue, Columbus, Ohio....1923
Gerald, Mary E. Fitz, 541 North Clay Avenue, Kirkwood, Missouri....1930
Getty, Mrs. B. M., 621 South Minnesota Avenue, Sioux Falls, South Dakota....1925
Gifford, Jr., Harold, 3676 Burt Street, Omaha, Nebraska....1930
Gilcrest, O. E., 5831 Waterbury Circle, Des Moines, Iowa....1930
Gillette, Fredericka B., 1319 Forest Avenue, Ann Arbor, Michigan....1928
Good, Henry G., Alabama Polytechnic Institute, Auburn, Alabama....1926
Gorham, Dean B., 255 No. Fairview Avenue, Decatur, Illinois....1926
Grafton, James, 819 Third Street, Antioch, California....1928
Grant, C. P., Field Museum, Chicago, Illinois....1928
Grant, E. R., Hotel Roosevelt, Washington, D. C....1928
Grant, Martin Lee, University of Minnesota, Minneapolis, Minnesota....1926
Grasett, Frank Goldwin, 535 Green Bay Road, Glencoe, Illinois....1923
Green, Dr. Wyman R., Department of Biology, University of Chattanooga, Chattanooga ,Tennessee....1926
Greene, Earle R., 642 Orme Circle, Atlanta, Georgia....1930
Gregory, C. E., Box 215, Morgantown, North Carolina....1928

Gresham, C. L., Lamasco, Kentucky....1925
Grimes, S. A., 109 Catherine Street, South Jacksonville, Florida....1924
Gromme, Owen J., Milwaukee Public Museum, Milwaukee, Wisconsin....1924
Gross, Dr. Alfred O., Bowdoin College, Brunswick, Maine....1927
Grover, H. Norris, 2731 Hartzell Street, Evanston, Illinois....1927
Guernsey, Raymond G., Trust Company Building, Poughkeepsie, New York....1926
Hadeler, Edward William, 336 South State Street, Painesville, Ohio....1917
Hadley, Miss Theodosia, Western State Normal, Kalamazoo, Michigan....1923
Hainsworth, William P., 214 Railroad Avenue, North Andover, Mass....1930
Hall, Watson, Athens, Illinois....1929
Hallinen, Joseph Edward, R.F.D. No. 1, Coopertown, Oklahoma....1922
Hallman, R. C., Box 847, St. Augustine, Florida....1928
Hamilton, Dr. B. A., Lock Box 22, Highland Park, Illinois....1916
Hanawalt, F. A., 65 West Broadway, Westerville, Ohio....1927
Hardisty, Arthur H., 1426 Irving Street, North East, Washington, D. C....1927
Harkin, J. B., Commissioner, Department of Interior, Ottawa, Ontario, Can....1924
Harper, Francis, 206 Dickinson Avenue, Swarthmore, Pennsylvania....1930
Harris, C. L., 921 West Central, Eldorado, Kansas....1928
Hayes, Samuel P., Jr., Amherst, Massachusetts....1928
Haywood, Ralph, Buckley, Dement & Co., 1300 Jackson Boulevard, Chicago, Illinois....1929
Hemphill, Frederick A., 128 Broad Street, Elizabeth, New Jersey....1928
Henderson, W. C., 8 Magnolia Parkway, Chevy Chase, Maryland....1928
Herman, Mrs. E. Olney, Momence, Illinois....1928
Hicks, Lawrence Emerson, Botany Department, Ohio State University, Columbus, Ohio....1925
Hiett, Lawrence D., 2617 Parkwood Avenue, Toledo, Ohio....1929
Hillmer, Davis B., 435 Canfield Avenue, West, Detroit, Michigan....1926
Hilton, Dr. Davie C., 305 Richards Block, Lincoln, Nebraska....1918
Hissong, R. D., 1908 Ingleside Avenue, Sioux City, Iowa....1927
Hoag, Benjamin, Garfield, Rensselaer County, New York....1922
Holck, J. H., Peterson, Iowa....1925
Holland, Harold May, Box 515, Galesburg, Illinois....1915
Hood, Miss Adah M., 1002 Ninth Street, Sioux City, Iowa....1913
Howe, Philip W., Hampton, New Hampshire....1924
Huff, Prof. N. L., 1219 Seventh Street, Minneapolis, Minnesota....1928
Hufford, G. N., 216 Seeser Street, Joliet, Illinois....1929
Hughes, George T., Box 153, Plainfield, New Jersey....1929
Hyde, A. Sidney, Vivarium Building, Wright and Healy Streets, Champaign, Illinois....1926
Hyer, Edgar Allen, Kent Museum, Grand Rapids, Michigan....1925
Ijams, H. P., Box 1150, Knoxville, Tennessee....1924
Ingersoll, Albert M., 908 F. Street, San Diego, California....1921
Ingham, Miss Loula, Nurses Home Annex, Herman Keifer Hospital, Detroit, Michigan....1930
Jackson, D. A., No. 5, Harrisonburg, Virginia....1930
Jay, William, 1 North Westview Avenue, Mt. Airy, Philadelphia, Pa....1924
Jefferson, Mrs. Edith H., 1381 Prairie Avenue, Des Plaines, Illinois....1927
Jenner, William A., 806 West Davis Street, Fayette, Missouri....1930
Jensen, J. P., Box 364, Dassel, Minnesota....1926
Jewell, Mrs. W. G., R.F.D. No. 2, Irving, Kansas....1930
Johnson, I. H., Bird Haven, South Hills, Charleston, West Virginia....1923
Johnston, Laura Mildred, Box 32, Lexington, Oklahoma....1925
Jones, Mrs. D. F., 425 No. Park Street, Watertown, South Dakota....1928
Jones, George T., 322 West College Street, Oberlin, Ohio....1923
Jones, Harold C., 352 West College Street, Oberlin, Ohio....1929
Jones, S. Paul, 509 West Avenue, North Waukesha, Wisconsin....1921
Jones, Sterling P., 690 Bonita Avenue, Webster Groves, Missouri....1930
Josten, Erick, Klemme, Iowa....1928
Junkin, Mrs. Paul S., 300 North Main, Fairfield, Iowa....1930

Kalmbach, E. R., Biological Survey, U. S. Dept. of Agriculture, Washington, D. C 1926
Kauffman, Howard A., Indian Springs Place, R.F.D. No. 5, Martinsville, Indiana 1930
Kearby, Miss Vera, George Peabody College for Teachers, Nashville, Tenn. 1927
Keim, Thomas Daniel, Glenndale, Prince George County, Maryland 1921
Kemsies, Emerson, 37 Morgan Street, Oberlin, Ohio 1929
Kendall, Miss S. Eva, 5610 Dorchester Avenue, Hyde Park, Chicago, Ill. 1928
Kendeigh, S. Charles, R.F.D. No. 2, Amherst, Ohio 1923
Kennedy, H. N., 16585 Burt Road, Detroit, Michigan 1925
King, Mrs. E. R., 1416 West Fifteenth Street, Sioux City, Iowa 1930
Klewer, Louis A., 2088 North Kennison Drive, Toledo, Ohio 1930
Klinck, Norman, 38 W. Parade Avenue, Buffalo, New York 1927
Knappen, Phoebe, 2925 Tilden Street, North West, Washington, D. C. 1926
Knight, Dr. Harry H., Department of Zoology and Entomology, Iowa State College, Ames, Iowa 1926
Knoth, Sibyl, Gulf Park College, Gulfport, Mississippi 1930
Koelz, Dr. Walter, University Museum, Ann Arbor, Michigan 1929
Koffel, Gerald L., 1012 George Street, Louisville, Ohio 1928
Komarek, Edwin V., 835 North Oak Park Avenue, Oak Park, Illinois 1926
Kubichek, W. F., Coe College, Cedar Rapids, Iowa 1926
Kutchin, Dr. Victor, Green Lake, Wisconsin 1921
LaMar, Kate E., 1253 Forty-second Street, Des Moines, Iowa 1930
Lancaster, L. Y., State Normal School, Bowling Green, Kentucky 1923
Lang, Libbie M., 2837 High Street, Des Moines, Iowa 1930
Langfitt, Miss Ellice, 1146 Thirty-seventh Street, Des Moines, Iowa 1930
Lapsley, Mrs. R. M., 307 Franklin Street, Keokuk, Iowa 1926
Lawrence, A. G., City Health Department, Winnipeg, Manitoba, Canada 1928
Lee, Mrs. Arthur, Fourteenth and Locust Streets, Atlantic, Iowa 1926
Leedy, Chas. A., care of The Telegram, Youngstown, Ohio 1927
Lehman, Mrs. John R., 2720 Howard Boulevard, Dayton, Ohio 1927
Letl, Frank H., Sublette, Illinois 1926
Lewis, Merriam G., 512 Highland Road, Lexington, Virginia 1930
Lincoln, Frederick C., Bureau of Biological Survey, Washington, D. C. 1915
Linsdale, Dr. Jean M., Museum of Vertebrate Zoology, University of California, Berkeley, California 1928
Livingston, Philip Atlee, Box, 302, Narberth, Pennsylvania 1926
Lloyd, C. K., 12 North Elm, Oxford, Ohio 1925
Lloyd, Hoyes, 582 Mariposa Avenue, Rockcliffe Park, Ottawa, Ontario, Canada 1922
Lodge, Fred S., 423 S. Stone Avenue, La Grange, Illinois 1929
Lomax, Dr. Claude C., Dale, Indiana 1921
Lowrie, E. R., 552 Oberlin Avenue, Lorain ,Ohio 1930
Luce, George W., R.F D. No. 1, Hayward, California 1923
Lundquist, Arthur, Peabody Hospital, Webster, South Dakota 1930
Luttringer, Jr., Leo A., State Game Commission, Harrisburg, Pennsylvania 1930
McCabe, Olivia, 3516 Fifth Street, Des Moines, Iowa 1925
McCann, Horace D., Box 175, Paoli, Pennsylvania 1928
McClun, Miss Carrie H., 805 Calhoun Street, West Liberty, Iowa 1930
McCorkle, Eloise, care of High School, Portage, Michigan 1925
McDavitt, Neva, 608 Normal Avenue, Normal, Illinois 1930
McGill, Dr. J. T., Vanderbilt University, Nashville, Tennessee 1929
MacLoghlin, Mrs. F. E., 43 Inglewood Drive, Hamilton, Ontario, Canada 1928
McNish, E. M., Madison, Tennessee 1921
Madson, Lillian M., 2519 Pierce Street, Sioux City, Iowa 1930
Manuel, Canuto G., Museum of Zoology, Ann Arbor, Michigan 1928
Mara, D. H., 91 Lakewood Street, Worcester, Massachusetts 1930
Marburger, Clifford, Denver, Lancaster County, Pennsylvania 1924
Martin, Early, Jr., 1909 Rio Grande Street, Austin, Texas 1929
Mason, Robert F., Jr., Toronto Apartments, Washington, D. C. 1927
May, Dr. John B., Cohasset, Massachusetts 1928

Mehl, A. K., Box 426, Fort Wayne, Indiana....1930
Meltveat, Burton W., Paullina, Iowa....1930
Michener, Harold, 418 N. Hudson Avenue ,Pasadena, California....1926
Miller, Mrs. H. C., 1110 Main Street, Racine, Wisconsin....1923
Miller, Miss Louise J., 2708 Elizabeth Avenue, Zion, Illinois....1929
Miller, Lyle, Sharline, Ohio....1928
Moffatt, E. E., 146 Oak Street, Winsted, Connecticut....1927
Moon, Miss M. Della, Lincoln Hall, Blufton, Ohio....1927
Moore, George A., Department of Zoology, Oklahoma A. & M. College, Stillwater, Oklahoma....1927
Morse, Frank E., Boston Bird Book Co., 162 Boylston Street, Boston, Mass....1926
Morse, George W., 318 East Ninth, Tulsa, Oklahoma....1920
Mossman, Pres. F. E., 3823 Garretson Avenue, Sioux City, Iowa....1928
Mousley, H., 4073 Tupper Street, Westmount, Montreal, Quebec, Canada....1922
Musselman, T. E., 124 South Twenty-fourth Street, Quincy, Illinois....1923
Nauman, E. D., 420 S. Shuffleton Street, Sigourney, Iowa....1923
Nelson, F. W., Sheldon, Iowa....1925
Nelson, James, Stephen, Minnesota....1929
Nelson, W. C., 4024 Grand Avenue, Des Moines, Iowa....1925
Newcomb, C. A., Jr., Bloomfield Hills, R.F.D. No. 3, Pontiac, Michigan....1914
Newton, Thomas Dodd, 6826 Clyde Avenue, Chicago, Illinois....1918
Nichols, Harvey, 559 Burton Avenue, Waterloo, Iowa....1930
Northcutt, Charles E., Court House, Columbia, Missouri....1930
Northrup, Ruby M., Department of Zoology, Oklahoma A. & M. College, Stillwater, Oklahoma....1926
Norton, Arthur Herbert, 22 Elm Avenue, Portland, Maine....1894
Paff, William A., 916 Paxinosa Avenue, Easton, Pennsylvania....1928
Palmer, Miss Mary C., 760 Midlothian Boulevard, R.F.D. No. 2, Youngstown, Ohio....1927
Palmer, Walter G., 142 Linden Avenue, Clayton, Missouri....1930
Paul, Dr. R. D., 1358 East Forty-seventh Street, Chicago, Illinois....1928
Peabody, Rev. P. B., 2011 Park Avenue, Topeka, Kansas....1930
Pellett, Frank C., Hamilton, Illinois....1926
Pellew, Miss Marion, Box 455, Aiken, South Carolina....1920
Pickens, A. L., Room 217, Zoology Building, University of California, Berkeley, California....1927
Pierce, Charles W., Boynton, Florida....1926
Pierce, Fred J., Winthrop, Iowa....1921
Pierce, John T., Anita, Iowa....1930
Pierce, Wright M., Box 343, Claremont, California....1926
Pike, Herbert, Whiting, Iowa....1926
Pirnie, Dr. Miles D., 117 Center Street, East Lansing, Michigan....1928
Polk, Ben K., 3700 Grand Avenue, Des Moines, Iowa....1930
Potter, Julian K., 437 Park Avenue, Collinswood, New Jersey....1916
Preble, Edward A., United States Biological Survey, Washington, D. C....1929
Purcell, Miss Ethel, Bass Junior High School, Atlanta, Georgia....1928
Ramsden, Charles Theodore, Apartado 146, Guantanamo, Cuba....1914
Rapp, F. W., Vicksburg, Michigan....1926
Ray, Edward M., Fredonia, Kentucky....1929
Reed, Ervin E., Monticello, Iowa....1922
Reeder, J. T., 318 College Avenue, Houghton, Michigan....1926
Reneau, A. C., Jr., Clarksville, Missouri....1929
Rich, Dr. Guy C., 1820 El Cerrito Place, Hollywood, California....1914
Richardson, Carl, Altamont Auto Park, Klamath Falls, Oregon....1926
Roark, Mrs. Louis, 926 N. Collins, Okmulgee, Oklahoma....1926
Robar, James E., Walworth, Wisconsin....1927
Roberts, Dr. Francis L. R., 2811 West Street, Ames, Iowa....1924
Robertson, John McB., Buena Park, California....1926
Robl, Frank W., Ellinwood, Kansas....1926
Ross, Julia E., 921 Thirteenth Street, Sioux City, Iowa....1923
Rouse, Miss Lorene A., Berrien Springs, Michigan....1930
Rowan, Prof. William, Alberta University, Edmonton, Alberta, Canada....1925

Ruffin, Winford A., Box 247, Auburn, Alabama....1925
Ruhl, Harry D., 318½ Albert Avenue, East Lansing, Michigan....1926
Sampson, W. B., 1005 North San Joaquin Street, Stockton, California....1927
Saunders, George B., McGraw Hall, Cornell University, Ithaca, New York....1926
Schafer, John J., R.F.D. No. 2, Port Byron, Illinois....1926
Schaller, R. A., 124 South College Drive, Bowling Green, Ohio....1930
Schaub, Mrs. J. B., 1040 Isabella Street, Wilmette, Illinois....1930
Scott, E. N., R.F.D. No. 5, Loveland, Ohio....1930
Scott, J. S., Dyersburg, Tennessee....1926
Scott, Mrs. R. T., 603 North Seventh, Cambridge, Ohio....1909
Scudder, Dr. Walter P., Litchfield, Ohio....1921
Schaffer, Mrs. Alicia B., 2260 Park Avenue, Walnut Hills, Cincinnati, Ohio....1923
Schultz, Miss Helen, George Peabody College for Teachers, Nashville, Tenn....1929
Shankland, F. N., Box 522, Willoughby, Ohio....1908
Sharp, Vernon, 1908 Acklen Avenue, Nashville, Tennessee....1924
Shaver, Dr. Jesse M., George Peabody College for Teachers, Nashville, Tenn....1922
Sheldon, Mrs. Addison, 1319 South Twenty-third, Lincoln, Nebraska....1930
Sherrill, Margaret L., Baldwin Cottage, Oberlin, Ohio....1929
Shirling, Prof. A. E., 3849 East Sixty-second Street, Kansas City, Missouri....1924
Shull, Miss Mildred, 136 East Queen Street, Chambersburg, Pennsylvania....1928
Simonds, Mrs. Ida K., Onawa, Iowa....1927
Simpson, Orval, 865 Auburn Road, Winnetka, Illinois....1928
Sloan, Dr. A. N., 1614 Morningside Avenue, Sioux City, Iowa....1928
Sloanaker, J. L., 1117 Maxwell Avenue, West, Spokane, Washington....1926
Smith, Grace, 1310 South Cornelia Street, Sioux City, Iowa....1926
Smith, Luther Ely, Suite 1554 Bell Telephone Building, St. Louis Missouri....1928
Smith, Malcom M., 105 Chase Street, Negaunee, Michigan....1927
Smith, Napier, Bank of Montreal, Verdun, Quebec, Canada....1928
Smith, O. Warren, 120 Church Street, Oconomowoc, Wisconsin....1923
Smith, Roy H., 183 North Prospect Street, Kent, Ohio....1925
Smith, Rufus A., Box 578, Shreveport, Louisiana....1930
Smith, Wendell Phillips, Wells River, Vermont....1921
Smyth, Dr. L. C. R., 235 Acton Road, Columbus, Ohio....1926
Snyder, L. L., Royal Ontario Museum of Zoology, Bloor Street and Avenue Road, Toronto 5, Ontario, Canada....1929
Speed, Mrs. James B., 505 West Ormsby Avenue, Louisville, Kentucky....1925
Sprunt, Alexander, Jr., 92 South Battery, Charleston, South Carolina....1929
Stansbury, Mrs. V. E., 3811 Peters Avenue, Sioux City, Iowa....1926
Stearns, Mrs. B. M., 111 West Fifty-first, Des Moines, Iowa....1930
Steedman, Mrs. A. B., 1447 South Third Street, Louisville, Kentucky....1927
Steunenberg, Florence A., 837 Omaha National Bank Building, Omaha, Nebraska....1928
Stevens, Prof. O. A., State College Station, Fargo, North Dakota....1926
Stevens, Mrs. P. H., 4370 Adams Street, Gary, Indiana....1926
Stevenson, George Ernest, Smithtown Branch, New York....1927
Stewart, Mrs. J. E., 1245 Thirty-seventh, Des Moines, Iowa....1929
Stewart, Paul A., Leetonia, Ohio....1925
Stiles, K. A., Battle Creek College, Battle Creek, Michigan....1928
Stockbridge, Charles Augustine, 2323 Webster, Fort Wayne, Indiana....1914
Storer, Dr. Tracy I., Division of Zoology, University Farm, Davis, California....1928
Strabala, Lon B., Box 129, R.F.D. No. 1, Leetonia, Ohio....1928
Strong, William Abner, 247 Grand Avenue, San Jose, California....1921
Studt, Earl K., Pewano, Michigan....1929
Sullivan, Walter F., 351 Turk Street, San Francisco, California....1925
Sumner, E. L., Jr., New Museum of Vertebrate Zoology, Berkeley, Calif....1929
Sundquist, Leona, State Normal, Bellingham, Washington....1926
Swanebeck, Harvey, R.F.D. No. 1, Fenton, Michigan....1926
Swanson, Gustav, 3305 Forty-seventh Avenue, South, Minneapolis, Minnesota....1927
Swedenborg, Ernie D., 4905 Vincent Avenue, South, Minneapolis, Minnesota....1929
Swenk, Mrs. Myron H., 1410 North Thirty-seventh Street, Lincoln, Nebraska....1925
Taber, William Brewster, Jr., Greenwood Farm, Kansas, Illinois....1926
Tait, Miss Blanche, George Peabody College for Teachers, Nashville, Tenn....1929

Tatum, Mary, 207 South Wood Street, Hominy, Oklahoma....1926
Taverner, P. A., Victoria Memorial Museum, Ottawa, Ontario, Canada....1925
Taylor, L., McDermott, Ohio....1921
Thomas, Mrs. Arthur P., 818 East Fifty-fourth Street, Indianapolis, Indiana....1928
Todd, R. Loyal, Milton, Wisconsin....1930
Trescot, Edward, Bacquet, Box 357, R.F.D. No. 4, Petaluma, California....1923
Turrell, Loring W., Smithtown Branch, Long Island, New York....1925
Tyrrell, Mr. W. Bryant, Cranbrook Museum, Lone Pine Road, Birmingham, Michigan....1929
Van Arsdale, Susan R., 984 Sheridan Road, Glencoe, Illinois....1926
Van Cleve, M. R., 3115 Hopewell Place, Toledo, Ohio....1926
Vaughn, Dr. H. S., Arcade, Nashville, Tennessee....1928
Wacherbarth, Miss Neva, The Wedgewood, Woodlawn at Sixty-fourth Street, Chicago, Illinois....1930
Wagner, Clifford, Tecumseh, Michigan....1928
Walker, Mrs. Bell, Murray State Normal and Teachers College, Murray, Kentucky....1926
Walker, Mrs. Emily Barry, George Peabody College for Teachers, Nashville, Tennessee....1929
Walker, W. M., Jr., 415 Twenty-fifth Avenue, South, Nashville, Tennessee....1925
Walkinshaw, Dr. Lawrence, 1421 West Michigan Avenue, Battle Creek, Michigan....1928
Walp, Russell Lee, Beards Lane, R.F.D. No. 3, Youngstown, Ohio....1926
Watterson, William H., 2662 East 130th Street, Cleveland, Ohio....1929
Warden, Miss Margaret Lindsley, 1806 East Belmont Circle, Nashville, Tennessee....1930
Warner, Willis H., R.F.D. No. 2, Canfield, Ohio....1926
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Watson, Lucius Howard, 4123 Sheridan Boulevard, Lincoln, Nebraska....1922
Weakley, Samuel H., Box 567, Fort Smith, Arkansas....1929
Weller, Lawrence J., R.F.D. No. 2, Jackson, Michigan....1928
Wells, Mrs. Homer E., R.F.D. No. 3, Marion, Ohio....1930
Welty, Carl, 112 Gates Hall, University of Chicago, Chicago, Illinois....1928
Wendelburg, Mrs. Toni R., 853 Twenty-eighth Street, Des Moines, Iowa....1925
Wendle, Joseph, Bowren Lake, Barkerville, B. C., Canada....1928
Weston, Francis M., U. S. Naval Air Station, Pensacola, Florida....1928
Weydemeyer, Winton, Fortine, Montana....1930
Weyl, Edward Stern, 6506 Lincoln Drive, Mt. Airy, Philadelphia, Pa....1927
Wheeler, Miss Cole, Chickamauga, Georgia....1930
Wilcox, LeRoy, Speonk, L. I., New York....1928
Williams, Owen L., 1228 Garfield Street, Lincoln, Nebraska....1927
Williams, Robert W., 419 North Calhoun Street, Tallahassee, Florida....1926
Willis, Warren J., Belle Rose, Long Island, New York....1928
Wilson, Miss Belle, 6410 Kenwood Avenue, Chicago, Illinois....1928
Wilson, Harold C., Ephraim, Wisconsin....1926
White, Stella L., Pine Hill Farm, Fairfax, Missouri....1930
Whitten, Easton W., Coffeen, Illinois....1930
Wolfram, George S., Canal Winchester, Ohio....1929
Wood, James, Museum of Zoology, University of Michigan, Ann Arbor, Michigan....1928
Wood, Norman A., Museum of Zoology, University of Michigan, Ann Arbor, Michigan....1925
Woodring, George B., 1414 Stratton Avenue, Nashville, Tennessee....1928
Woolman, Edward, Box 128, Haverford, Pennsylvania....1928
Worthley, W. F., Chicago Academy of Sciences, Lincoln Park, Chicago, Illinois....1930
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